DISSERTATION

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Seeing the Lighthouse—
As Simple As the ASBC?

Facilitating Organizational Change in the U.S. Air Force

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RAND Graduate School

19991207 115

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Preface

The Air and Space Basic Course (ASBC) was chartered in 1997 to address concerns presented by Air Force leadership at the Fall 1996 CORONA Conference held at the U.S. Air Force Academy in Colorado Springs, Colorado. At the CORONA meeting, senior Air Force policymakers including the Secretary of the Air Force (SAF) and the Chief of Staff of the Air Force (CSAF), desired to remedy five deficiencies observed within the Air Force officer corps:

- a lack of understanding of the Air Force Core Values

- a lack of appreciation for the Air Force Core Competencies

- the inability to responsibly advocate how 21st century aerospace power can contribute to success in joint military operations

- the existence of careerism among officers from different commissioning sources and air force specialty codes (AFSCs)

- a misunderstanding of the importance of the teamwork concept within the American military.

The primary focus of this dissertation is upon the ASBC and how it could serve as a catalyst for organizational change within a broader military education and training context. In this work, the ASBC is used as a *case study* for the purpose of developing lessons learned and policy implications within the education and training environment. Likewise, this dissertation recognizes broader policy implications such as the type of institutional changes that may have to occur to support the infusion of education and training during the organizational transition. It is highly unlikely that the introduction of a single course like ASBC will accomplish the overarching task by itself. Viewed in this light, the ASBC concept could be one of several methods necessary to facilitate organizational change--others include changes to the officer commissioning programs, the professional military education (PME) structure, revision of the career development process, and many others. Along these lines, the major components of this research are to analyze the purposes of the ASBC in greater-depth, assess how well the course achieved its objectives, and analyze the policy implications associated with implementing the course (or a

hybrid) on a broader scale in Fiscal Year 1999 and beyond. Specifically, this dissertation will address the following research questions:

- What is the historical context and need for an ASBC related course?

- What is the content of the ASBC and how was it developed?

- What are the impacts of the course upon the trainees who attended it?

- How will ASBC fit into the current model of officer education and professional military development and what are the ramifications to the Air Force?

- What other institutional changes may be required to support the knowledge that is gained from the ASBC?

Given the nature of a policy analysis dissertation as an integrative piece, this work will combine several qualitative and quantitative analysis tools to answer these questions. Some of the tools include the use of: historical research, curriculum content analysis, experimental design, and statistical analysis. This dissertation is intended to provide Air Force policymakers with substantive evidence and recommendations for improving the ASBC. As this dissertation points out, there are significant changes that should be made to the existing curriculum and course layout prior to being implemented in the FY99 timeframe and beyond; recommendations fall into two categories: 1) those associated with making the ASBC a better fit with the CORONA tasking and 2) suggestions for broader organizational issues that will need to be implemented to support the learning that occurs at ASBC. Failure to implement such recommendations could result in suboptimal results relative to what CORONA envisioned in 1996.

This dissertation is submitted to the RAND Graduate School in partial fulfillment of the requirements for the degree of Ph.D. in Policy Analysis. All research was conducted outside of the RAND Corporation environment while I worked at the ASBC as an Air Force Reserve Captain. In this capacity, I was hired by ASBC to serve as the Deputy Director for Evaluations from January through July 1998 to develop and design an evaluation that would assist the organization in answering the CORONA question: What is the impact of the ASBC? Chapters 3, 4, and 5 of this dissertation will show how I answered this question. This work was neither sponsored nor funded by RAND research or the RAND Graduate School. This paper is based

upon my own research and does not necessarily reflect the views of RAND, the ASBC, Air University (AU), the Air Education and Training Command (AETC), or the United States Air Force (USAF).

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Acknowledgments

An insightful, yet anonymous individual once said: "there is no such thing as a self-made person. We are all made up of the people who helped us, who guided us, and who provided us their time and wisdom." This quote couldn't have been truer for me during the recent past while I conducted the research and writing of this dissertation, for I have been the beneficiary of all of these gifts from a host of different people. First and foremost, I wish to thank my dissertation committee who provided the type of professional guidance and mentoring necessary to complete this work. The team of Bart Bennett, Roger Benjamin, Clay Chun, and Natalie Crawford was one of the most professional groups that I have ever had the opportunity to work with--I greatly benefited from their expertise and encouragement. Although not officially on my committee, I adopted Marian Branch as a fifth expert who guided me through the labyrinth of report structure and grammar. A sixth member, Charles Moskos of Northwestern University in Evanston, Illinois, provided a review of the material that made this dissertation substantively better. I thank him for his time, energy, and willingness to participate in the newly founded RGS quality review process. Together, these six professionals constituted a committee that was second to none.

Secondly, I wish to thank my fellow RGS classmates, the RGS faculty, and the RGS administration who made the past few years some of the most colorful of my life. They helped me to appreciate the tremendous benefit of diverse perspectives, critical thinking, and objectivity. These people contributed more to my personal and professional growth than they will ever realize. Most importantly of all, however, they made it fun. Finishing this dissertation means that I will also not be seeing them as often as I would prefer. Jennie Gross, Jill Hoube, Moira Inkelas, Maren Leed, Leo Morales, Dave Persselin, Robert Reichardt, David Robalino, and Lorne Teitelbaum are some of the highest quality people who I have ever had the opportunity to interact with. It is my sincerest pleasure to say that they were like brothers and sisters to me--I wish them the best as they pursue their bright futures.

Thirdly, I want to extend my sincerest gratitude to the people who provided me the opportunity to be a part of the Air and Space Basic Course at Maxwell AFB, AL. Without the support of Lieutenant Colonel Brandon Wood, Dr. Bobby Jordan, Technical Sergeant Dave Bryson, and the entire ASBC staff, it's not clear that I would have had the unique opportunity to be part of such an interesting and important part of Air Force history. They provided me with the resources and opportunity to get things done in an efficient, yet meaningful way. I only hope that I have been able to assist them as much as they have helped me during the past year. I will never forget the opportunity that they gave me to work in their organization and to be part of such an important adventure. They epitomize the highest quality of professionalism and dedication to service above self.

Fourth, I cannot say enough praise about my Air Force Academy classmates who have provided the type of lively discussion and debate that I needed in order to see various sides of the issues. Captains Ben Davis, Bill Gideon, James Jinnette, and Cris Marchiori have been some of my closest friends for more than a decade dating back to our days together at the Academy. They are example officers and creative thinkers who were always willing to lend a critique of the material and my thought process when I ran astray from the realities of what is happening in the Air Force today. Their comments on earlier drafts of this dissertation proved to be an invaluable resource for integrating such thought. They are a very special group of individuals who I share a unique bond of officership with.

Finally, I want to thank God and my family who have provided me with the emotional energy, stamina, and encouragement to persevere--needless to say, I have prayed much during the past four years. My parents, Sandy and Bob Thirtle, and my brothers Steve and Dave, were always there for me when I needed people to talk with, to remind me that the end was not too far away, and that I was capable of getting it done. Lastly and most importantly, my wife Denise and daughter Natalie have been part of the process from the very beginning and they have provided the sanity and clarity for guiding me through to the end. I could not have asked for more support. I love them very much and want to dedicate this work to them as a small token of my gratitude.

Biography

Mike Thirtle is a management consultant with PricewaterhouseCoopers LLP in Los Angeles, California where he assists both public and private sector clients with change integration, strategic planning, and business process improvement initiatives. Before joining PricewaterhouseCoopers LLP in 1998, he was a full-time Ph.D. candidate (Policy Analysis) at The RAND Graduate School (RGS) in Santa Monica, CA. At RAND, Mike authored several RAND publications on military acquisition reform, Air Force strategic planning, USAF officer accessions, and education initiatives within the Department of Defense (DoD). Aside from his civilian employment, Mike is also a captain in the U.S. Air Force Reserve and is attached to the Defense Contract Management Command (DCMC) in Van Nuys, California. In that capacity, he works as an acquisition manager for assisting DCMC with contract management oversight of DoD contractors in Southern California. He has both M.B.A. (Finance) and M.S. (Economics) degrees from Wright State University in Dayton, Ohio and graduated with a B.S. (Biology) with Military Distinction from the U.S. Air Force Academy in Colorado Springs, Colorado.

Acronyms

Acronym	Description
ABC	Airman's Basic Course
ACES	Air Command Exercise System
ACSC	Air Command and Staff College
AETC	Air Education and Training Command
AFB	Air Force Base
AFCEE	Air Force Center for Environmental Excellence
AFI	Air Force Instruction
AF/LRP	Air Force Long Range Planning
AFPC	Air Force Personnel Center
AFSC	Air Force Specialty Code
AFWI	Air Force Wargaming Institute
ANOVA	Analysis of Variance
AOC	Air Operations Center
ASBC	Air and Space Basic Course
ATO	Air Tasking Order
AU	Air University
AWC	Air War College
BOT	Basic Officer Training
CADRE	College of Aerospace Doctrine, Research, and Education
COT	Commissioned Officer Training
CPB	Curriculum Planning Board

Acronym	Description
CSAF	Chief of Staff of the United States Air Force
CVETH	Core Values and Ethics
DG	Distinguished Graduate
EDV	Evaluations Division at the Air and Space Basic Course
EOC	End of Course
FY	Fiscal Year
GPA	Grade Point Average
HISTCC	History and Core Competencies
HQ	Headquarters
ISD	Instructional Systems Development
JAOC	Joint Air Operations Center
JASOP	Joint Air Strategic Operations Plan
JFACC	Joint Forces Air Component Commander
LPDP	Lieutenants Professional Development Program
MOOTW	Military Operations Other Than War
NCA	National Command Authority
NCO	Non-Commissioned Officer
OPSDOC	Operations and Doctrine
OTS	Officer Training School
PME	Professional Military Education
POI	Plan of Instruction
PSCORE	Percentage Score
ROTC	Reserve Officer Training Corps
SAAS	School of Advanced Airpower Studies
SAF	Secretary of the Air Force
SAIC	Science Applications International Corporation

Acronym	Description
SCN	Survey Control Number
SES	Senior Executive Service
SOS	Squadron Officer School
TBS	The Basic School
TIRC	Test Item Review Committee
UAV	Unmanned Aerial Vehicle
UCMJ	Uniform Code of Military Justice
USAF	United States Air Force
USAFA	United States Air Force Academy
USMC	United States Marine Corps
VPI	Value Preference Indicator
WOC	Wing Operations Center
WWII	World War II

Chapter

1

Needs and Methods for Organizational Change in the U.S. Air Force: Setting the Stage for Analysis of the ASBC

One night at sea, a ship's captain saw what he thought were the lights of another ship heading toward him. He had his signalman blink to the other ship, "Change your course 10 degrees south." The reply came back, "Change your course 10 degrees north." The ship's captain answered, "I am a captain. Change your course south." Another reply came back, "Well, I'm a seaman first class. Change your course north." The captain was mad now. "I said change your course south. I'm on a battleship!" To which the reply came back, "And I say change your course north. I'm in a lighthouse..."

Although this is a naval story, it has special import for the Air Force in a figurative sense. The past decade has demonstrated that the only thing certain about national security planning is uncertainty. In some cases, change has brought about positive outcomes such as winning the Cold War. In other cases, however, global security is considered to be less stable than ever during the past 40 years. The focus upon Military Operations Other Than War (MOOTW); nuclear, chemical, and biological weapons; and the emergence of terrorism as a threat to peace have forced policymakers to see the lighthouse as well as the light and "shift paradigms" so that they reconsider the methods by which the military will fight and win future conflicts. As Secretary of the Air Force Sheila Widnall stated in 1996,

> With the end of the Cold War, the ways in which we now operate and the missions we execute in support of that larger goal have changed dramatically.[1]

The need to be aware of the lighthouse could be a metaphor for aspects of the Air Force in the 21st century that need to be scrutinized before proceeding: the retention of quality personnel, the need for smaller and lighter weaponry, awareness of adversaries with novel

tactics, or a change to the way that future leaders are trained to lead. This last point, especially, was the genesis of this dissertation and focus upon the role of the Air and Space Basic Course (ASBC) as one method (among several) for facilitating organizational change as the Air Force enters the new century.

The ASBC was chartered in 1997 to address concerns presented by Air Force leadership at the Fall 1996 CORONA Conference held at the U.S. Air Force Academy (USAFA) in Colorado Springs, Colorado. At the CORONA meeting, senior Air Force policymakers including the Secretary of the Air Force (SAF) Sheila Widnall and the Chief of Staff of the Air Force (CSAF) General Ronald Fogleman, desired to remedy five deficiencies within the Air Force officer corps:

- a lack of understanding of the Air Force Core Values
- a lack of appreciation for the Air Force Core Competencies
- the inability to responsibly advocate how 21st century aerospace power can contribute to success in joint military operations
- the existence of careerism among officers from different commissioning sources and air force specialty codes (AFSCs),
- a misunderstanding of the importance of the teamwork concept within the American military.[2]

Research Questions

The primary focus of this dissertation is an examination of the ASBC and how it will serve as a catalyst for facilitating organizational change within the broader context of military education and training by addressing the issues listed above. In this work, the ASBC will be used as a *case study* for the purpose of developing lessons learned and policy implications within the education and training environment. This dissertation recognizes that broader change may have to occur to support the ASBC during the organizational transition due to the fact that it is highly unlikely that the introduction of ASBC will accomplish the overarching task by itself. Viewed in this light, the ASBC concept could be one of several methods necessary to facilitate organizational change-- others include changes to the officer commissioning programs, the professional military education (PME) structure, and the introduction of new technologies.

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[1] Secretary of the Air Force Sheila Widnall, "The Air Force in the New World Order," Remarks prepared for the Air Force Association National Symposium, Orlando, Florida, February 16, 1996.

[2] AF/LRP *White Paper* from July 1996 and CORONA briefings, Fall 1996

The major aims of this research are to analyze the purposes of the ASBC in greater depth, assess how well the course achieved the CORONA objectives, and examine the policy implications associated with implementing the course on a broader scale in fiscal year 1999 and beyond. Specifically, this dissertation addresses the following research questions:

- What is the historical context and need for an ASBC-related course?
- What is the content of the ASBC and how was it developed?
- What are the impacts of the course upon the trainees who attended it?
- How will ASBC fit into the current model of officer education and professional military development and what are the ramifications to the Air Force?
- What other institutional changes may be required to support the knowledge that is gained from the ASBC?

Guiding Framework

The guiding model for writing this dissertation is divided into two general parts. The first part highlights both theoretical and historical information and is focused on providing context for the ASBC requirement. In Chapters 1 and 2, I show how the Air Force is in the midst of a significant change, how education and training can theoretically affect such change, and how the ASBC was chosen as one method to facilitate change. The second part of this dissertation (Chapters 3 through 6) is an examination of the impacts of the ASBC by the use of curriculum content analysis, experimental design, tests and surveys, and quantitative analysis to determine if it fulfilled CORONA's expectations. Based upon this evidence, I conclude that the ASBC has met part of its original charter but it is also in need of significant change prior to being implemented as a stand-alone course. From this conclusion, there are two types of policy recommendations that are developed: 1) suggestions to enhance the development and execution of ASBC to meet the CORONA vision and 2) broader-scale organizational changes that will be needed to support the ASBC. The next section begins the first part of this dissertation by providing background information on the policy issue.

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[3]Although the ASBC is initially focused solely upon new officers in the Air Force, there are also implications for providing similar educational material to more senior officers, enlisted personnel, and civilians.

Background

Air Force Education and Training

In 1947, the U.S. Air Force was designated as a military service separate from the U.S. Army. The separation was based on the assumption that the United States required a military branch dedicated to airpower. Since that time, the Air Force has been solely responsible for the recruitment, training, education, and professional development of its service members. Like the Army, Navy, and the Marine Corps, the Air Force relies upon its commissioned officer corps for leadership and vision. This reliance has placed great emphasis upon the degree to which Air Force officers are educated and professionally trained through both their commissioning programs and their PME coursework. Figure 1.1 shows the current model for professional military education within the Air Force.

In this model, all line officers are commissioned through one of three primary sources--the Air Force Academy, the Reserve Officer Training Corps (ROTC), or the Officer Training School (OTS). Non-line officers like lawyers, doctors, and dentists are commissioned through a Direct Appointment.[4] After commissioning, officers do not receive any follow-on PME until approximately seven years into their careers. At that time, captains attend Air University's Squadron Officer School (SOS) at Maxwell AFB--the home of all Air Force PME. Later in their career, officers attend the Air Command and Staff College (ACSC) and the Air War College (AWC) a continuation of their professional development. The timeline presented in Figure 1.1 is considered to be typical for the average officer; it may differ for individuals according to their promotion to grades at faster/slower rates.

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[4] See Thirtle, Michael R., "Air Force Officer Accessions: A Brief Review," RAND Corporation, P-8001-RGS, June 1997 and Thirtle, Michael R., "An Inventory of Educational Benefits and Officer Commissioning Opportunities Available to U.S. Military Servicemembers," RAND Corporation, MR-988-OSD, February 1999 for information on line and non-line commissioning programs.

Figure 1.1 Current Model of Professional Military Education Within the Air Force

Professional Military Education for Air Force Officers

Years in the Air Force

0   5   10   15   20

Proposed

Current

Air War College
•Located at Maxwell AFB, AL
•Typically occurs as a Lt Col/Colonel
•Competitive selection for in-residence
•Correspondence and seminar available
•Duration is 44 weeks
•Approximately 250 in-residence students

Air and Space Basic Course
•Located at Maxwell AFB, AL
•All new lieutenants
•Entry from commissioning source and prior to first assignment
•Duration is 7 weeks

Air Command and Staff College
•Located at Maxwell AFB, AL
•Typically occurs as a major
•Competitive selection for in-residence
•Correspondence and seminar available
•Duration is 40 weeks
•Approximately 600 in-residence students

Squadron Officer School
•Located Maxwell AFB, AL
•Occurs typically as a captain
•Competitive selection for in-residence
•Correspondence option available
•Duration is 7 weeks
•*Approximately 700 students in-residence

Proposed

Commissioning Source
•Air Force Academy (4 years)
•Reserve Officer Training Corps (2-4 years)
•Officer Training School (13.5 weeks)
•Direct Appointment (5 weeks)

Note: Timeframes for taking courses shown above are considered to be typical; some officers may take earlier in their career--others may take slightly later

In order to percolate solutions to the five deficiencies cited at the CORONA conference to the lowest level of the officer corps, the CORONA conference participants recommended that all newly commissioned officers attend a new PME course. As shown in Figure 1.1, attendance at the course was proposed to occur immediately after officer commissioning and prior to any technical, occupational training, or substantive time on active duty. The course was envisioned as inspiring Air Force officers to comprehend their roles as airmen who understand and live by the Air Force Core Values, articulate and demonstrate the Air Force Core Competencies, and dedicate themselves as warriors in the world's most respected air and space force. Prior to standing-up as a formal PME requirement, Air University (the parent organization of Air Force PME) was directed by the CSAF to conduct an experiment during the summer and fall of 1998 to test the concept.

Within this context, the ASBC was established as a test course at Maxwell AFB. Since 1997, ASBC personnel have developed an education curriculum and tested the curriculum on newly minted officers to address the five deficiencies from the fall 1996 CORONA. As directed by

the CSAF, the ASBC consisted of a single test course, called 98A, which was conducted for seven weeks from July through August 1998. The course was taught by a cadre of instructors from both ASBC and SOS. A total of 312 individuals (288 military officers and 24 civilians) from across all commissioning sources, Air Force Specialty Codes (AFSCs), ethnicities, gender, and experience participated in the test of the course curriculum.

A Changing Focus

The Air Force, like many institutions, has changed significantly during the past 50 years. Some of the change may be attributed to organizational ebb and flow; other reasons for change include exogenous factors such as economics, technology, world events, and American politics. In any case, the service has continued to evolve in ways that were impossible to predict five decades ago.[5] Along these lines, Air Force leaders of the late 20th century have speculated that the Air Force of the future will look markedly different from the way it looks today and completely different from the way it looked in the past. Examples of changes may include the use of unmanned aerial vehicles (UAVs) for many facets of flight operations, deployment of more lethal weapons with greater range and precision, and a move to the outer limits of the atmosphere (i.e., space) to conduct strategic military operations.[6] Such leaders have also postulated that tomorrow's leaders will be faced with different challenges that the current commissioning and PME structures are not addressing.

In a recent address to the first graduating class of the ASBC, General Lloyd "Fig" Newton, Commander of the AETC stated

> Military education is extremely critical for the twenty-first century warrior. The Air Force strongly believes that an educated airman brings more to the fight. Education enhances their ability to understand the military's role as an instrument of diplomacy.
>
> Additionally, military education provides members with the intellectual resources to perform more capably within their career fields and makes them better airmen, supervisors, strategists, and Air Force leaders. In

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[5] *New World Vistas*, page 78.
[6] General Ronald R. Fogleman's Testimony before the U.S. House of Representatives National Security Council, May 22, 1997.

> a nutshell, military education gives our airmen the ability to think independently, creatively, analytically, and outside the box. Our people must be intellectually prepared to assume leadership positions in the Air Force and within joint and coalition forces of the twenty-first century.
>
> As an expeditionary aerospace force, we must develop "warrior-leaders" who can successfully lead air forces and others with a wide variety of capabilities into hostile, austere environments. The superior technology of the United States will only be successful if employed by well-trained, well-educated, and capable warriors and leaders.[7]

Recent Air Force policy has focused greater interest upon how the United States will be able to positively control not only the air, but space alike.[8] Discussions and briefings by senior Air Force leaders have gone as far to say that the service will transition from an "air" force to an "air and space" force to a "space and air" force and eventually to a force dedicated toward protecting and defending space.[9] Other terminology has focused on the term "aerospace" to describe the future niche of the Air Force. It appears, from the Air Force perspective, that space is considered to be the "high-ground" for future conflict.

It goes without saying that to fulfill such a vision, the Air Force must undergo significant change from where it is today--much to the same extent that it has since its inception. One should expect changes to:

- the type of military hardware that will be required
- doctrine for fighting future adversaries
- the methods and programs for educating and training future leaders.

None of these changes will be insignificant, and will undoubtedly foster other, more striking paradigm shifts as well. Similar to the paradigm shift that occurred for the captain in the lighthouse, there is a reasonable probability that new change will continue in the near future as the Air Force crosses into the next century.

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[7] General Lloyd "Fig" Newton, "Address to the Air and Space Basic Course," July 6, 1998, Maxwell AFB, AL.

[8] New World Vistas, page 10.

[9] Dr. Sheila Widnall, Secretary of the Air Force, at the swearing-in ceremony for General Michael E. Ryan, Air Force Chief of Staff, October 10, 1997. Bird, Julie, "The Chief's Vision: A Cultural Shift Will Change the Way You Work, Train, Advance, Fight, and Think," *Air Force Times*, December 2, 1996: p. 12.

Searching for Purpose in the Midst of a Paradigm Shift

The term "paradigm" can be traced to Thomas Kuhn's work in the 1960s, particularly in his book entitled *The Structure of Scientific Revolutions.* For the most part, paradigms are rules (or models) by which an individual, organization, or society make decisions. Kuhn described *paradigms* as accepted examples of scientific practice that provide models from which spring coherent traditions of scientific research. In the most general sense of the concept, people who share similar paradigms are essentially committed to similar ideals and ways of looking at the world. Paradigms are essentially constructs of perceived reality that are used to guide discussion and decision. Although some portion of objective reality (science) may be part of a paradigm, often times the theory behind the paradigm furnishes the justification for observations and decisions that tend to be subjective and non-quantifiable.

Another definition of "paradigm" was provided by Joel Barker in his book, *Paradigm: The Business of Discovering the Future:*

> a set of rules and regulations (written or unwritten) that does two
> things: 1) establishes or defines boundaries and, 2) it tells you to
> behave within such boundaries.[10]

It is clear from this definition that the Air Force, as well as any type of organization, has certain types of rules and boundaries that it adheres to. Examples of such boundaries include the following:

- Military personnel have the Uniformed Code of Military Justice that sets it apart from other professions, restricting personal choice and freedom of expression.[11]

- Servicemembers are expected to defend the Constitution of the United States against all enemies, foreign or domestic, at any cost including giving their lives

- Airmen, sailors, and soldiers consider teamwork to be a necessary component to achieving organizational success.

- Rank has its privileges

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[10] Barker, Joel, *Paradigm: The Business of Discovering the Future*, Harper Business, New York, 1992.
[11] For a detailed explanation of standards, see: Rick Maze, "Proposal Would Raise Standards for Officers," *Air Force Times*, July 14, 1997: p. 4.

Although boundaries exist in all organizations, it is clear that rules do change. Specific military examples of change include the Navy's use of carrier aircraft instead of battleships, the Army's use of tanks instead of cavalry, and the Air Force's "breakaway" from the Army as a separate service. As highlighted by these examples, organizational rules may be altered because of technological changes; other reasons may include changes in society or economic impacts. In his 1980 piece entitled "Organizational Paradigms: A Theory of Organizational Change," Alan Sheldon emphasizes the relevance of paradigmatic theory to organizational change:

> All organizations tend toward a paradigm—toward some perfect fit reflecting some idealized way of working that is cherished. Normal change does not threaten that paradigm. But when, on occasion, a near-perfect fit is achieved, with all dimensions harmoniously directed toward some cherished end, the organization becomes ultrastable—an end in itself—and any change in any dimension now threatens the paradigm. The world will dissolve if any part of it should change; if anything is lost, all is lost. It is at such a point that people feel they would rather fight—or die—than switch.[12]

Since the end of the Cold War and even more specifically, from the end of the Persian Gulf War, the United States military has been undergoing a paradigm shift with respect to its *purpose*. During the Cold War, through Vietnam, and up until the early 1990s, the bedrock of U.S. national security planning was stopping the spread of communism. With its sights set on defeating the Soviet Union, the military: developed and procured weapons systems, trained its personnel, and developed doctrine based upon an idea that war would be with the Soviets on the European front. Today, the military's vision is less apparent: fewer communist countries exist now than at any time since World War II, there appears to be less threat of the use of nuclear weapons, and it is not clear who the adversaries of the United States truly are. Today, national security is focused upon fragmented regions of the globe, third-world countries, and organized terrorist groups. These changing circumstances have forced architects of U.S. national security

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[12] Sheldon, Alan, "Organizational Paradigms: A Theory of Organizational Change," *Organizational Dynamics*, Winter 1980, p. 62.

planning to rework a comprehensive strategy for the 21st century.[13] In this regard, the Air Force

has also turned inward to redefine its purpose.

Technology and Culture

Technology

Examination of Air Force policy during the recent past indicates at least two major

paradigm shifts are underway. Both of are an outgrowth of the overarching paradigm shift of

purpose that all services are facing. The *first* involves the very thing upon which the Air Force

was founded upon: *technology*. In this context, technology refers to airplanes, hardware

systems, etc. From the public's perspective, this is the face of the Air Force. It is readily

apparent in recruiting commercials and daily news articles, and has been the main focus of Air

Force leaders since the service's inception. Given the types of advances in lighter and stronger

weaponry, positioning systems, and electronic media, the Air Force will continue to change its

focus by the type of tools that it can use. This will not be a new phenomenon for the Air Force to

adjust to.[14] As General Thomas Moorman (former Vice CSAF) indicates, the Air Force is actively

planning for the arrival of future technology.

> The 21st Century is upon us and I believe the trends I've spoken about
> will probably become realities. An integrated air and space program
> that combines total battlefield awareness and knowledge with rapid and
> dependable communications to get information to the decision maker
> or shooter, fully integrated with highly capable, survivable manned
> aircraft and a fleet of unmanned aerial vehicles (both with precision
> munitions) is the wave of the future...this capability merges the third
> and fourth dimensions of warfare, will be augmented by that fifth
> dimension, information. I believe that these new capabilities promise to
> usher in a new century that, if you will forgive a bit of parochialism, may
> very well be known as the Aerospace Century. Much as the Roman
> age was defined by the legions that conquered the known world, and
> the European Age of Discovery and Exploration was dominated by
> great naval fleets that secured trade and commerce well into the
> modern era, the 21st Century could well become the age of air and
> space power. Air and space power in the hands of democratic nations

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[13] Fogleman, Ronald R. and Sheila E. Widnall, *Leading Airmen into the 21st Century: Meeting the Leadership Challenges of the United States Air Force*, U.S. Air Force, 1996, p. viii.
[14] Builder, p. 167.

will be used to help secure the peace, provide humanitarian assistance and deter aggression throughout the world.[15]

Culture

The *second* paradigm shift is taking place in the human side of the organization and involves a change to the type of *culture* that exists within the Air Force. It is this change that provides the impetus for the creation of the ASBC and which provides a significant challenge for the Air Force as it enters the 21st century. Review of Air Force history during the past five years indicates that the Air Force culture has been rather turbulent. In general, such turbulence appears to be the result of introspection and propagation of thoughts that were prevalent many decades ago (and will be more thoroughly explored in Chapter 2). For example, current Air Force leadership refers to a need for a *'back to basics approach'*[16] for how its people are to conduct themselves. The words *integrity*, *honesty*, and *character* have been purposefully articulated by leaders in the hopes that the Air Force can once again capture a certain attribute that is perceived to have existed many decades ago, an attribute lost for one reason or another.[17] The following excerpt from the *Air Force Times* captures these thoughts:

> From what he has written on the subject, it is clear that the Chief (General Fogleman) is convinced that unless any organization has **bedrock principles** on which it builds, it risks drifting from crisis to crisis, repeating its mistakes and never achieving its full potential. He is not alone. The **core-values** effort, under one name or another, has been going on for at least **25 years**. Even if it is successful, it will have to be revisited time and again. It's not unlike instilling **religious values**. Because you've been to church, temple or mosque doesn't mean you understand and are living those values and never need to revisit the subject.
>
> Fogleman does appear to be backing up the rhetoric with concrete actions. He is issuing suggested reading lists for officers (and later for enlisted members and civilian employees) at all points in their careers so they will know more about air and space doctrine and be more familiar with **leadership concepts** and **Air Force traditions**.

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[15] General Thomas S. Moorman Jr., Vice Chief of Staff, United States Air Force, "The Challenges of Space Beyond 2000," Remarks to the 75th Royal Australian Air Force Anniversary Airpower Conference, Canberra, Australia, June 14, 1996.

[16] For specific examples, see: Watkins, Stephen, "Emphasizing Core Values: Fogleman Forges Onward to Change the Ethical Climate," *Air Force Times*, January 6, 1997: p. 14.

[17] See Richard W. Stokes, Jr., *Preserving the Lambant Flame: Traditional Values and the USAF Officer Accession Program*, Air University, September 1984, for a more detailed description of values and ethics.

He wants to create an Air and Space School that will take officers from all commissioning sources -- the service academy, ROTC and Officer Training School -- before their first real-world assignments and start molding them into people who think of themselves first as airmen and then as pilots, personnel specialists, missileers and so on. He has ordered all commands to hold discussions on core values for all members. Fogleman wants people thinking about how to make the **core values part of everything they do.**[18]

First-hand discussions with senior Air Force policymakers as part of the research for this dissertation indicated a very similar tone: Air Force leaders desire to capture what they perceive has been lost. Thus, the word *change,* when used in the context of organizational change, actually means recapturing a sort of *'paradise lost.'* [19] The situation in which the Air Force finds itself is also similar to Kuhn's description of crisis and the emergence of new theories.[20] For the Air Force, the blurring of the paradigm is in the works: it is no longer focused upon fighting the Soviet Union with Cold War ideologies. Indicative of the on-going revolution within the Air Force are the types of questions that senior leaders have posited:

- What are the roles and mission of the Air Force?
- What are the core values of the Air Force?
- What are the key core competencies?
- Who is the enemy?
- How will the next war be fought?
- What type of systems will be required?
- Who will serve in the military?
- How will we recruit the right people?

Figure 1.2 highlights the continuum of leadership, military activities, and change that have been in the works since the fall of the Berlin Wall. During the past five years, Air Force leaders have instituted a wide range of programs that have addressed *organizational culture* and clarification of values and mores. These actions are indicative of an organizational change that McWhinney and Batista would characterize as one that is attempting to remythologize where it came from and what are its core principles.

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[18] "Building a Better Air Force," *Air Force Times,* March 3, 1997, page 29.
[19] This term was used by several senior leaders during interviews conducted by the author in describing where the Air Force cultural changes are heading.
[20] Kuhn, p.111.

Remythologizing is a process that recaptures the original source energy of organizational and communities; it summons back to consciousness the founding ideals and the oft-told tales that helped establish and maintain an organization's identity, thus linking the primal energy with present conditions. There are many examples of **renaissance** in political and social history, and individual **spiritual rebirth** is an almost daily occurrence; however, the revitalization of an organization by capturing its **essential** idiom is less common. The culture of organizations--let alone the idea that each organization might embody a core myth--has only recently been recognized at all; nevertheless, the maintenance of a mature culture depends on the revitalization of existing industrial, educational, and social service organizations.[21]

Figure 1.2 Continuum of Conflict, Questions, and Issues

Continuum of Conflict, Questions, and Issues

1950 1955 1960 1975 1990	1995	2000	2005
Significant U.S. military activities:			
Cold War			
Vietnam			
	Southwest Asia	???	
	▲Somalia		
	Balkans	???	

Questions posited by the USAF:	
-How will we defeat the Soviet Union? -How can airpower be used to stop communism? -How many nuclear warheads, bombers, and aircraft assets will we need? -What role does the USAF play in the strategic triad? -Where should we base airpower assets to limit the spread of communism?	-What are the roles and missions of the USAF? -What are the core values? -What are the core competencies? -Who is the enemy? -How will war be fought? -What type of systems will be required? -What type of technology will be available? -How will we recruit the right people?

Air Force leaders and issues:	**McPeak**	**Fogleman**	**Ryan**
	-Committee on Roles and Missions -Bottom-up review -Global Reach -Quality Air Force -Base Force -Stealth Technology	-Back to basics -Core values -Competencies -Training (ASBC) -Reading list -UAVs	-Definition of "Airman" -Implementation of ASBC -Air Expeditionary Force

What is Organizational Culture?

Throughout the 1980s and 1990s, a library of literature has been written on the subject of organizational culture and how an organization can define and change. In a 1983 article, Joanne

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[21] McWhinney, Will, and Jose Batista, "How Remythologizing Can Revitalizing Organizations," Organizational Dynamics, Autumn 1988, p. 46.

Martin and Caren Siehl summarized much of the research that had been accomplished through the period:[22]

- Cultures offer an interpretation of an institution's history that members can use to decipher how they will be expected to behave in the future.

- Cultures can generate commitment to corporate values or management philosophy so that employees feel they are working for something they believe in.

- Cultures serve as organizational control mechanisms, informally approving or prohibiting some patterns of behavior.

- Some types of organizational cultures are associated with greater productivity and profitability.

A *culture* is a coherent system of core assumptions, core values, and dominant organizing principles for an organization's self-definition, its relationships, its history, and interactions with outside influences. In many ways, this same definition could apply to human beings as individual entities as well. In any case, an understanding of the cultural values that best support an organization's strategy is important for an organization to change. With these thoughts in mind, the next section addresses the topic of organizational change, how change can be facilitated, and how the Air Force expects that the ASBC will work in its plan for change.

Organizational Change

As Osborne and Gaelbe point out in the Introduction of "Reinventing Government," there are many attributes that are common to organizations across all functional responsibilities, whether they are corporate or governmental.[23] Some of the similarities include:

- recruiting and training new personnel
- specializing in a product area or service
- providing utility to a consumer base.

In the same sense that a commercial business like McDonalds faces competition from other fast-food companies, the Air Force faces competition from potential adversaries as well. In light of such competition, the service must continue to change to meet future demands to ensure the national security of the United States for its customer, the American people. This

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[22] Martin, Joanne and Caren Siehl, "Organizational Culture and Counterculture: An Uneasy Symbiosis," *Organizational Dynamics*, Autumn 1983, p. 52.

comparison between the military and private-sector businesses as organizations is an important one—in many ways the two are more similar than not from the perspective of being able to prescribe tools for facilitating change.

Navigating the Tempest of Change

During the late 1970s through the early 1990s in the United States, there were volumes written on the subjects of organizational restructuring, cultural change, and quality improvement. Peters and Waterman (*In Search of Excellence*), Hammer and Champy (*Reengineering the Corporation*), and Deming (*The New Economics*), as well as many others,[24] populated the field with new ideas and concepts for facilitating change in the corporate environment. Many, if not all, of these key works were direct responses to the increased competition U.S. companies were facing from overseas competitors such as Japan and other Far East nations. Similar to Kuhn's description of the "revolutionary process," American companies underwent significant changes toward redefining product and service niches, establishing higher standards of quality, and restructuring organizations for greater efficiency. Today, different paradigms for doing business than those of twenty years ago are in place. Many of the paradigm shifts that occurred (and continue to occur) were facilitated by one of many "levers" of change.

Levers of Change

To facilitate change during this period of increased overseas competition, some American companies were forced to take drastic steps to remain viable. A scan of the business literature of this period indicates six general methods whereby companies facilitate changes to

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[23] Shafritz and Ott, p.534.
[24] Other works include: William Bridges, "Managing Organizational Transitions," *Organizational Dynamics*, Summer 1986, pp. 24-33; Richard M. Hodgetts, et al., "New Paradigm Organizations: From Total Quality to Learning to World-Class," *Organizational Dynamics*, Winter 1994, pp. 5-19; Leonard Goodstein, et al., "Creating Successful Organizational Change," *Organizational Dynamics*, Spring 1991, pp. 5-38.

different/higher standards of quality and service:[25] ***education and training***, construction and/or modification of a ***vision*** statement, ***reorganization*** of the internal reporting structure, changes in ***market niche*** focus, changing human resources ***skills mix***, and the use of new ***technology***. In every documented case of organizational change during this period, at least one of these methods was implemented; many times, companies used a combination of methods to achieve their goals. These six methods for creating change within an organization can also be referred to as "levers" of change.[26]

Similar to what American corporations of the 1980s faced in paradigm shifts due to changing markets, today's Air Force is also confronted with new and uncertain challenges resulting from the end of the Cold War. To a certain extent, the Air Force has also used the six generalized areas mentioned above to begin a changing process as well. During the past decade, the Air Force has either started or has accomplished the following: instituted new ***training*** initiatives to indoctrinate its future leaders, redefined and communicated its ***core values and competencies***, consolidated and ***reorganized*** major commands, changed its ***focus*** from nuclear war to MOOTW and conventional operations, ***reduced the number*** of people in the service, and relied upon ***different technologies*** such as unmanned air vehicles. Figure 1.3 summarizes the general categories and examples of how Air Force policies and programs fit within each.

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[25] Literature reviewed for this analysis included: Thomas Peters and Robert H. Waterman, Jr., *In Search of Excellence*; Tom Peters, *Thriving on Chaos*; Tom Peters, *A Passion for Excellence*; Philip Crosby, *Quality Without Tears*; Michael Hammer and James Champy, *Reengineering the Corporation*; Michael Hammer, *Beyond Reengineering*, and Edwards Deming, *The New Economics*.
[26] PricewaterhouseCoopers Change Integration philosophy, 1998.

Figure 1.3 Levers and Examples for Facilitating Organizational Change

Category	Air Force Example
Education/training ➤	– Air and Space Basic Course – School for Advanced Airpower Studies
Vision ➤	– Definition of core values and competencies – Theory of Global Engagement
Reorganization ➤	– Change in Air Staff – Consolidation and reorganization of command structure
Market Niche ➤	– Nuclear War and fighting communism to . . . .? – Conventional war to . . . unconventional war?
Skills Mix ➤	– Change in aptitudes and skills – Loss of personnel/reduction in force
Technology ➤	– Manned vehicles to unmanned vehicles – Reliance upon information and computers

Use of Education and Training in Facilitating Organizational Change

Of the levers listed above, the one most relevant to this dissertation is how education and training can effect change within the organization. The use of training as a method of change is not a new one. As Irwin Goldstein pointed out,

> Training represents a positive hope for persons such as those who are either first entering the work world or are **changing** their work environment. When training is designed well and implemented properly, it provides opportunities for people to enter the job market with needed skills, perform in new functions, and be promoted into new situations.[27]

Similar thoughts were expressed by Tannenbaum et al. in a 1991 article in the *Journal of Applied Psychology*:

> Employees, managers, and organizations are increasingly turning to training as a means to address work issues. For example, training is used to improve current job skills, to prepare for career advancement, and to retool for entry into the organization. Training programs have become, in many cases, the main socialization process for new employees.[28]

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[27] Goldstein, Irwin L., "Training in Work Organizations," Chapter 9.

[28] Tannenbaum, Scott, John Mathieu, Eduardo Salas, and Janis Cannon-Bowers, "Meeting Trainees' Expectations: The Influence of Training Fulfillment on the Development of Commitment, Self-Efficacy, and Motivation," *Journal of Applied Psychology,* Volume 76, No. 6, P. 759.

Even though training is an important (and necessary) activity for facilitating change, other research has indicated that the act of training could be meaningless if the training approach is strictly limited to the training activity itself. For example, in a 1985 article written in the *Training and Development Journal*, Conrad Jackson pointed out that for training to be successful in the process of planned change, an individual must be open to the training and willing to incorporate the new knowledge into their framework.[29] He cites Kurt Lewin's work[30] and states that

> before a change can take place in a system (or an individual), an
> unfreezing of current attitudes must occur. For example, no matter how
> much one nags someone to lose weight or stop smoking, that person
> usually is unwilling to do so until he or she chooses. A crisis can
> unfreeze our attitudes toward change...even after change occurs,
> sustaining the change may be difficult. Lewin also notes that it is
> important to build a set of supports around a change in order to
> "refreeze" the system in the new configuration.[31]

It is clear from this statement that the act of training, in and of itself, may not necessarily cause change. Instead, there are various activities that must be accomplished (both pre- and post-training) to ensure that participants use the information that they have learned. In support of the quote above, Jackson provides a model for ensuring that training will be effective. This model compromises seven separate steps as shown in Figure 1.4.

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[29] Jackson, Conrad N., "Training's Role in the Process of Change," *Training and Development Journal*, February 1985, p. 70.

[30] Lewin, Kurt, "Group Decision and Social Change," in E.E. Maccoaby, T. M. Newcomb, and E.L. Hartley (editors) *Readings in Social Psychology*, 1958.

[31] Jackson, p. 70.

Figure 1.4 Programs and Activities Contributing to Individual Change[32]

Change Steps	Examples of Activities or Processes
Awareness	• Pre-training experiences[33] • Model provided by behavior of others • Awareness-raising training programs
Understanding	• Lectures, films, computer-assisted instruction • Reading assignments • Experiential exercises
Belief	• Logical deduction • Observation of own or others' successes • Observation of values or skills of esteemed others
Effort	• Experiential exercises • Trying out change on the job
Reward	• Integrate skill into performance appraisal • Contract for support from supervisor or co-workers
Feedback	• Contract for feedback from supervisor or co-workers
System Accommodation	• Collaborating with others affected by the change

The goal of Jackson's model is to produce trained personnel who will use their newly found knowledge to the betterment of the organization. Apparent from this structure, Jackson has organized the thoughts in a pedagogical format. Before training starts, potential trainees should have an understanding of what will occur during the training experience. Contact with trainees prior to training should be positive and should build up the training experience as a beneficial one. In the second stage, the training should be focused on ensuring that participants understand the material. Reading assignments and experiential (hands-on or role-playing) exercises are also useful. In achieving the third stage, it is important for participants to see the logic of the information that is provided as well as observing participants and instructors around them. The final three stages are indicative of post-training initiatives that should be used to reinforce the training that was received. Without proper rewards, feedback, and collaboration with others to change the system, it is not clear that training will cause people or, eventually, the organization to

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[32] Jackson, p. 72; Figure 2.

[33] See Jeffrey D. Facteau, et al., "The Influence of General Perceptions of the Training Environment on Pretraining Motivation and Perceived Training Transfer," *Journal of Management*, Volume 21, No. 1, pp. 1-25, for a description of the effects of trainee motivation on outcomes.

change in an expected manner. The bottom line from this model is that many activities are required to support training in changing the organization.

Empirical Evidence of How Training Affects Change

Dependent upon how well the activities are achieved, how "good" the training program is, and how well the material is delivered, how training affects change within the organization has been shown by empirical research to vary. One relevant study showed the impact of PME upon value formation. The primary purpose of the study was to determine if attendance at initial PME (in this case, the Squadron Officer School) changed the personal values of junior Air Force officers to make them more congruent with the values of the Air Force. The study concluded that attendance at initial PME changed the personal values of the officers in a way that was more congruent with what the Air Force desired.[34] Other relationships should also be considered when determining the effects of training upon the organization. In their 1991 work, Tannenbaum, Mathieu, Salas, and Cannon-Bowers described a model for determining how specific variables affect training outcomes. This model is presented in Figure 1.5 and is very similar to the thoughts developed by Jackson in the previous section.[35] In their study, the researchers discovered the following:[36]

- Training fulfillment was positively related to post-training organizational commitment, physical self-efficacy, academic self-efficacy, and training motivation, even after pre-training attitudes and a set of individual demographic variables were controlled for

- Pretraining motivation, trainee reactions, and training performance were also related to the development of post-training attitudes

Other research indicates similar outcomes. Facteau et al.[37], Noe et al.[38] and Noe[39] also concluded that the effects of pre-training motivation and subordinate, supervisor, and peer

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[34] Macey, James R., *The Effects of Attendance at Initial Professional Military Education On the Personal Values of Air Force Officers*, unpublished Ph.D. dissertation, Auburn University, April 22, 1986.

[35] Tannenbaum, Scott I., et al., "Meeting Trainees' Expectations: The Influence of Training Fulfillment on the Development of Commitment, Self-Efficacy, and Motivation," *Journal of Applied Psychology*, Volume 76, Number 6: p. 762.

[36] Ibid., p. 759.

[37] Facteau, Jeffrey, et al., "The Influence of General Perceptions of the Training Environment on Pretraining Motivation and Perceived Training Transfer," *Journal of Management*, Volume 21, No. 1, p. 1.

support are significant support variables for the effective transfer of training material into the

workplace. The bottom line to the research is that training, in and of itself, may not have the type

of expected long-term impact if it is not properly couched in the design of a larger training

program. As one consideration for assessing the long-term impact of ASBC, this model provides

a valid structure for determining whether or not the ASBC is properly designed. Chapters 3

through 6 of this dissertation will demonstrate that the ASBC could benefit from several

recommendations associated with this design—specifically, there is a need for setting

expectations and providing post-training follow-up in the workplace.

Figure 1.5 Tannenbaum, et al. Model for Determining How Variables Affect Post-Training Attitudes

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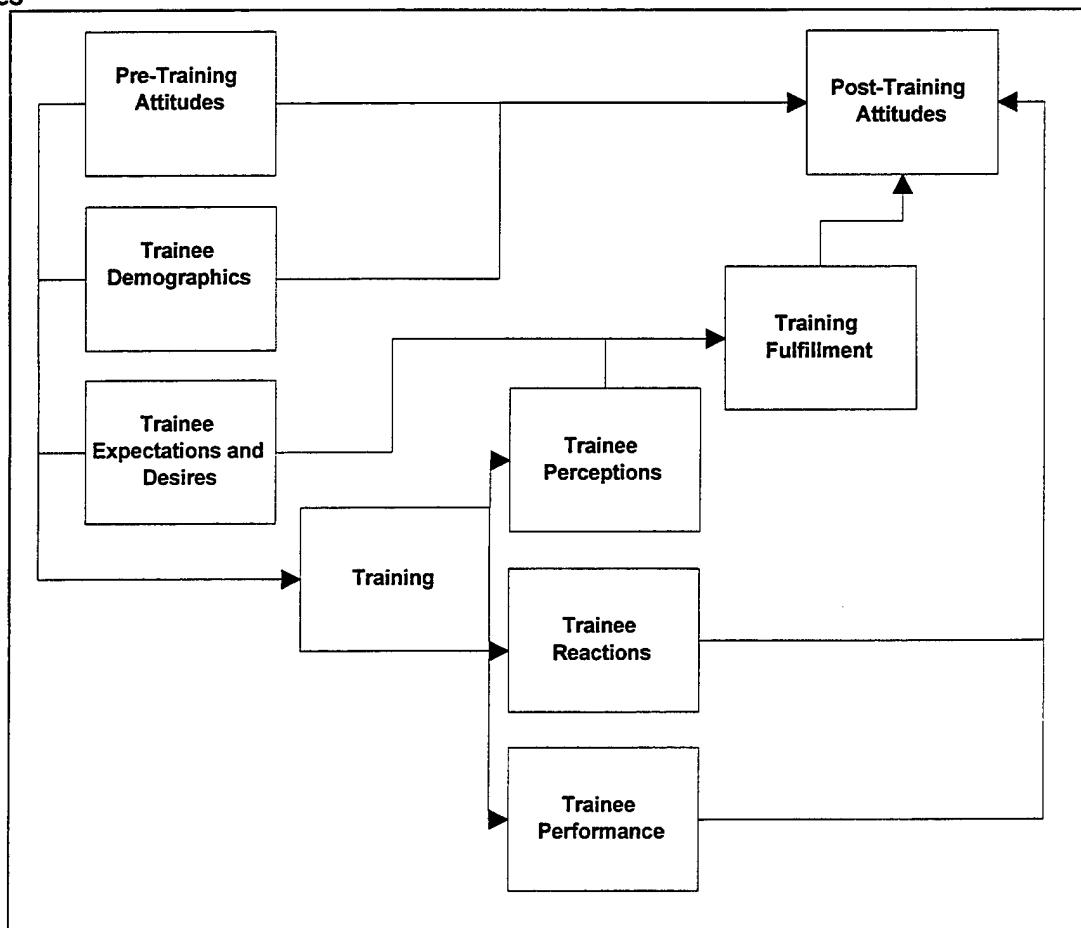
[38] Noe, R. A. and N. Schmidt, "The Influence of Trainee Attitudes on Training Effectiveness: Test of a Model," *Personnel Psychology*, Volume 39: p. 497.
[39] Noe, R.A., "Trainee Attributes and Attitudes: Neglected Influences of Training Effectiveness," *Academy of Management Review*, Volume 11: p. 736.

How the Air Force Expects the ASBC to Facilitate Change

Given the Air Force's current state of introspection and need for defining its culture, the ASBC has been envisioned by senior leaders as a means of creating change within the newest ranks of the officer corps. In a 1998 speech to the students at ASBC, General Lloyd "Fig" Newton summarized the role of ASBC in the context of the types of problems that the Air Force is facing, the need to develop a stronger culture, and the reason for using the ASBC at this important juncture in Air Force history:

> ASBC is the beginning of the training and education continuum, which will develop you into a **"warrior leader"** who can see over the horizon. ASBC will lay the foundation for everything else you do in the Air Force. It will prepare you to serve as airmen in the twenty-first century. But there is a more basic, fundamental reason for ASBC, and that **is to strengthen the culture of the Air Force**.
>
> Unfortunately, we **strayed away from the fundamental principles** of the value of airpower taught by early pioneers such as Billy Mitchell, Ira Eaker, Claire Chennault, and Haywood Hansell. Ask any Marine Corps member what he or she is and the response will resound loud and clear – I am a Marine; present the same question to an Air Force member and the typical response will be, I'm a pilot, personnel officer, communications officer, space operations officer, etc. You see, we have become stovepiped, a force represented by many specialties, and we haven't been talking or **thinking of the inherent values and factors that tie us together as a coherent force**.
>
> Over the past decade we lost the "bubble," on what it **means to be an airman**, and ASBC was created to regain that by providing an experience common to all airmen. ASBC will bring all of our newly commissioned officers together and create a **common base of understanding** of how all the elements of our force fit together. This course was designed to provide you with a common frame of reference for understanding and employing aerospace forces. It will help you move away from being Air Force specialists and towards warfighting strategists.[40]

In determining whether or not the ASBC was able to achieve the type of gains that General Newton spoke of, the remainder of this dissertation analyzes the ASBC in greater detail from various perspectives. The next chapter extends the material presented in this section by exploring how the ASBC requirement developed. It will answer the how, why, who, and when questions of the history of the requirement. Chapter 3 examines the curriculum content of ASBC

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[40] General Lloyd "Fig" Newton, "Address to the Air and Space Basic Course," July 6, 1998, Maxwell AFB, AL.

in greater detail and shows that General Newton's concept of "warrior-leader" may not have been fulfilled to the extent that was desired. Chapter 4 details the experiment design that I developed to assess the short-term impacts of the course upon the participants from both cognitive and affective viewpoints. The results of this experiment are presented in Chapter 5 and show that part of the CORONA vision was fulfilled while a substantive portion was not. Finally, in Chapter 6, I present recommendations made to enhance the ASBC concept and support its implementation.

Chapter

2

Origination of the ASBC Requirement

"The beginnings and early years of military schools do not often lend themselves to interesting and profitable study. Too frequently the day-to-day decisions and resulting happenings seem too commonplace to record. As time goes on, however, origins are distorted and those who follow are unable to give valid reasons for the practices with which they are involved. Too many times we have wished to know why certain things were done. We would like to read the writings of those who were there, of those who made the decisions or carried them out."
—Colonel Russel V. Ritchey from Years of the Tiger[41]

The origins and development of the ASBC are very similar to the situation that Colonel Russell Ritchey faced during the development of the burgeoning Squadron Officer Course (now the Squadron Officer School) in the 1950s.[42] In some respects, the requirement for an ASBC can be traced to the origins of the Air Force, the organizational culture that has developed, and the structure of the officer commissioning sources. Because of the diversity of events that have contributed to the ASBC requirement, it is impossible to succinctly point toward one or two reasons for the course's existence. Rather, the need for an ASBC can be viewed as a rich weave of differing thoughts and activities that have occurred during the past forty years.

This chapter tries to capture how such thought evolved and how linkages between key events, people, and thoughts facilitated the ASBC requirement. Figure 2.1 summarizes the major milestones that led to the requirement. Throughout the remainder of this chapter, each one of these milestones will be discussed in order to paint a clearer picture of why the Air Force decided to choose ASBC as one of its many alternatives for facilitating organizational change. Chapter 1 highlighted several of the historical influences that have existed during the past forty years and

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[41] Ritchey, Colonel Russel V., *Years of the Tiger*, Squadron Officer School, Air University, Maxwell Air Force Base, Alabama, June 1974, page 9.

the role that education and training can play in changing an organization—as Figure 2.1 shows, these had significant impacts upon the direct linkages. The next section will pick up where Chapter 1 left off—by describing a key, unpublished document that was written in the late 1980s that captured some officers' sentiments of the problems with the Air Force.

Figure 2.1 Influences and Linkages in the Development of the ASBC Requirement
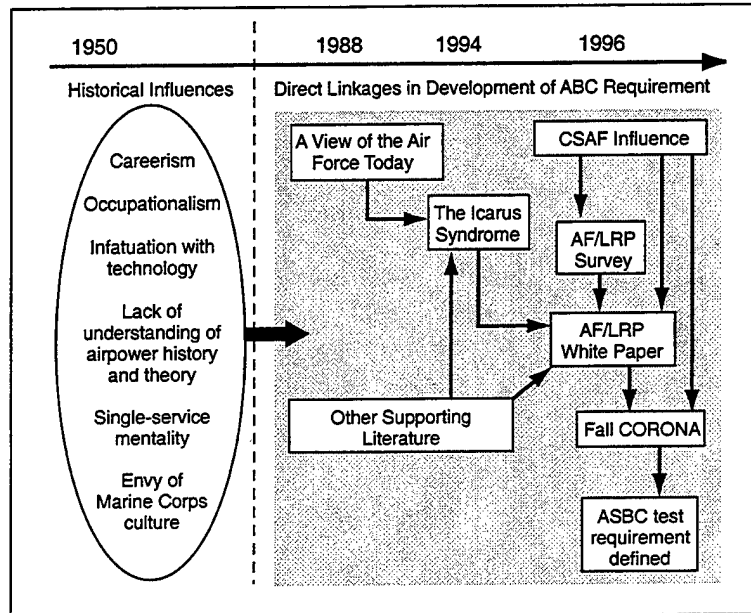
A View of the Air Force Today

In the fall of 1989, a paper was written by a group of anonymous Air Force officers that discussed the problems that the Air Force was facing. The draft report was never officially published and it by no means represented official Air Force policy; however, it was circulated around the top leadership circles of the Air Force and later it was disseminated throughout the service. In a nutshell, the paper described a growing concern and frustration that the officers

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[42] There are several striking similarities between Ritchey's description of the development of SOS and the chronology of the development of the ASBC. Some of these include: 1) the changing nature of Air Force culture and the need for professional education to facilitate new thought, 2) the methodology used to develop curriculum, and 3) the energy and excitement (and various setbacks from time-to-time) associated with the genesis of a new USAF Professional Military Education.

were feeling with respect to how the Air Force was conducting its business.[43] The paper directly

criticized Air Force leadership for their lack of vision and apathy while allowing the service to

deteriorate with respect to many of the historical influences that were mentioned in Chapter 1 of

this work. Although one can not generalize the viewpoints of the piece to everyone in the Air

Force in 1989, the work was significant in that a group of officers was motivated enough to

publicly express their concerns about such institutional problems. As Carl Builder pointed out in

his book *The Icarus Syndrome*:

> The paper is remarkable for its direct criticism of the Air Force and its
> leadership, for its earnest effort to be constructive in its criticism, and
> for its acceptance by many as a view worthy of consideration by Air
> Force leadership, if only as indications of some institutional problems
> that needed attention.[44]

One specific passage describes the general feeling of the authors:

> the dominant image for many in the Air Force is of an institution under
> siege and in disarray. This image would surprise many others because
> the positive aspects and developments within the institution are so
> numerous. But, despite the positives, the Air Force seems to have lost
> its sense of identity and unique contribution. Although the current
> external environment is a part of the problem, the institution's
> difficulties are mostly internal. The Air Force may have crippled itself
> for the decade ahead. Even if disaster is not imminent, the trends are
> adverse and need to be checked if the Air Force is to fulfill its national
> security role.[45]

This passage demonstrates both candor and concern on the part of the *View's* authors.

The following list summarizes the major points of the document:

- The Air Force has devolved from its *roots* in airpower theory.
- As opposed to the other military services which have identified themselves with a mission,
  the Air Force has identified itself with *technology* and has subsequently become associated
  with a specific type (the airplane), resulting in a weaker *sense of community* among airmen
  than among members of the other military services.
- The Air Force has no *integrating vision* such as, for example, the Maritime Strategy or
  AirLand Battle created by the Navy and Army, respectively. The lack of a unifying vision has
  resulted in weak *organizational ties* and a focus upon systems as opposed to missions.
- The Air Force is willing to *compromise its principles* in order to gain objectives with respect to
  systems or procedures.

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[43] *A View of the Air Force Today*, 1989, was co-authored by several Air Force officers. The document describes
the authors' perceptions of the ills of Air Force culture in the late 1980s. Although I was not able to verify the
impact of the document on current stakeholders' attitudes, many were familiar with its content. Undoubtedly,
this document set the stage for Builder's thoughts and research that directly affected the concept for an ASBC
related program.

[44] *Icarus*, pp. 3-4.

[45] *Icarus*, p. 5.

- .The lack of a *common* institutional identity could be a factor in Air Force *retention* problems.
- The Air Force leads the other services in its tendency toward *occupationalism.*[46]
- To recapture an environment in which *strategic thinking* thrives, the Air Force must embrace *airpower history*, develop a robust *vision* statement, and exploit the concept of *jointness*.

The Icarus Syndrome

To many in the Air Force, it is likely that these statements were (and still are) rather hard to digest. Carl Builder acknowledged that the statements provided in the *View* may not have been embraced by the totality of the service, but, likewise, he did not dismiss such thoughts as being out of step, either. To Builder and others like Gene Myers[47] and Lynn Vermillion[48] the ideas presented above were probably closer to reality than not; in fact, he used these concepts to probe deeper into the history of airpower development and the U.S. Air Force in order to understand their underpinnings. This section describes the *Icarus Syndrome.*[49]

Originally published in 1994, *Icarus* is Builder's vehicle for describing his perceptions of what was ailing the Air Force at a time when the service had begun serious introspection in the late 1980s.[50] *Icarus* is particularly important in the documentation of the genesis of ASBC, because Builder was one of the first to broach the subject with senior Air Force leadership in a public forum. Even more importantly, Builder's work is directly traceable to the seminal documents that were written by Air Force policymakers. Three forces stimulated Builder to document his thoughts on what the Air Force needed to remedy its problems: 1) his own experience in talking with Air Force officers, 2) an examination of the history of the USAF, and 3) take the pulse of the culture of the USAF in the late 1980s.

Accordingly, Builder structured his research questions around three hypotheses:[51]

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[46] The term "occupationalism" was generated by the work of Charles C. Moskos and Frank R. Wood in their book, *The Military: More Than Just a Job?*, Pergamon-Brassey's, 1988. In this book, Moskos and Wood raise the "institution versus occupation" dichotomy.

[47] Many citations agree with Builder's analysis of the subject. See "Air Force has Lost its Ideological Way," by Gene Meyers in the April 14, 1996 version of the *Air Force Times* for more information on the subject.

[48] Lynne E. Vermillion, "Understanding the Air Force Culture," Air War College Research Report, Maxwell Air Force Base, April 1, 1996.

[49] Carl Builder, *The Icarus Syndrome*, 1994.

[50] Reference Carl Builder's *The Masks of War: American Military Styles in Strategy and Analysis*, RAND, 1989 for historical and cultural information on the American military.

[51] Icarus, pp. 20-1.

- The Air Force may be facing some serious institutional problems.[52]
- Some of the problems appear to be unique to the Air Force when the Air Force is compared with the other services.
- The unique problems that the Air Force faces deserve to be better understood so that actions can be formulated and taken.

Development of Airpower Theory

Builder concluded that airpower theory was developed by visionaries who initially bucked the system of the traditional Army in order to establish airpower as a unique method for conducting warfare. Men like General Billy Mitchell sacrificed their careers to change paradigms in the face of daunting opposition.[53] However, Builder also points out that the early airpower visionaries had different reasons for embracing the role of airpower in the military—essentially, the theory attracted different people for different reasons.[54] Some of these differing reasons included the following:

- *Military professionals* conceived the theory as a more effective way to wage war and to *organize its means*.
- *Military aviators* embraced airpower theory because it gave a higher purpose to their *love of airplanes* and flying.
- The *American public* were dismayed by the *bloody stalemate* of trench warfare in WWI and hoped to avoid its repetition by the use of aerial bombardment; and
- *American politicians* had to raise money for the military and saw the use of airpower as a way *to buy defense capabilities less expensively* than army or naval forces.
- Independence from the Army

Lack of a Unifying Vision

Although it is intuitive that different stakeholders have different reasons for believing in a theory, the reasons above provide some very powerful insights into the organizational problems of the Air Force that exist today. Given that different people have different views for the purpose of an Air Force, the way that airpower theory was "sold" as an independent need in military

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[52] Other authors have emphasized similar themes as well. See Szafranski and Libicki, "…Or Go Down in Flame," *Airpower Journal*, Fall 1996, pp. 65-77 for their perspective on the consequences of not fixing the problems that exist within the USAF.

[53] An excellent synopsis of the early years of the Air Force can be found in the first chapter of Herman S. Wolk's *The Struggle for Air Force Independence*, 1997. Builder also provides a detailed account of USAF beginnings in Chapters 4-9 of the *Icarus Syndrome*. "William 'Billy' Mitchell's Air Power," by Lt Col Johnny R. Jones is yet another contemporary presentation of early airpower history that details the thoughts of General Mitchell.

operations differed with the audience. It is not too far-fetched to think that the lack of a unifying vision, although necessary to "sell" and establish airpower during its formative years, may be exactly what has caused the deterioration of a sense of *ideological bonding* in the Air Force today.

The lack of a unifying vision is further exacerbated by the impact that technology has played in the Air Force. Builder viewed the role of the atomic bomb during and after World War II as a critical element to establishing the Air Force as a service independent from the Army. As the deliverer of nuclear weapons, the Air Force gained virtually instant credibility for its ability to attack an enemy (in the case of WWII, the Japanese) while minimizing the impact of loss of life of U.S. forces.[55] The signal that U.S. policymakers sent to the military, specifically the Air Force, was undeniable: Technology development and delivery are important—not only for executing the military mission, but for the very existence and continuance of a military service itself. The Air Force embraced this ideology, and as Builder cites, the Air Force was guided by[56]

- accommodating new technical means for the missions that it owned
- preserving its roles, missions, and budget slice against the predations of its sister services
- ensuring that its own factions or fiefdoms had their futures secured with the prospect of 'follow-on' vehicles, whatever they might be.[57]

The Growth of Occupationalism

Differing reasons for embracing airpower theory (previously cited) accompanied by the role of technology, created a situation that Builder refers to as "the case for occupationalism."[58] *Occupationalism*[59] in this context is a negative organizational attribute in which individuals bond more with their job specialty than they do with the service as a whole. As pointed out in the *View* as well, many Air Force leaders are concerned that the rise of occupationalism has negatively

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[54] *Icarus*, p. 66.
[55] *Icarus*, p.177
[56] Ibid.
[57] See Cynthia J. Grey's work "Beyond the Wild Blue Yonder: Creating an "Air and Space" Culture in Today's Air Force, Maxwell AFB, AL, April 1998, for a contemporary version of the same issue.
[58] *Icarus*, p. 180.

affected a broader focus upon teamwork and unification to accomplish the mission. One symptom of this problem is expressed by answers to the following question: "What is your job?" Air Force leadership hopes that people will answer: "I am an *airman.*"[60] The reality of the current situation, however, is that Air Force people tend to answer the question with their occupational specialty. For example, a pilot would say: "I am a pilot (or derivations thereof, like fighter pilot or bomber pilot); an acquisition officer may say: "I am a program manager," etc. The main point here is that there tends to be lack of occupational unity.[61]

Loss of Both Heart and Soul

A final issue that Builder expressed in *Icarus* was the relationship between the role of leadership and the culture of the organization. To Builder, these represented the heart and soul of the organization. He expressed the following to Lt General Phillip J. Ford (then Commandant of the Air Command and Staff College at Air University) in a letter written in 1991:

> As you indicated, airpower is one piece, the profession of arms is the other. One is the heart of the Air Force, the other is its soul. The senior leadership of the Air Force is the trustee of the heart; but everyone in the Air Force is a trustee of its soul. The heart is about organizational purpose or mission—airpower—and the soul is the profession of arms—the absolute and total commitment to mission...
>
> The problem, as I see it, is that the two—heart and soul—have failed each other: The senior leadership has failed to keep the heart—the mission of airpower—alive and vibrant by keeping it at the forefront of all its actions. And without the mission, members of the Air Force have had nothing to commit themselves to except their own careers or specialties.
>
> The leadership can't dedicate the organization to its mission just by lip service; its decisions (including promotions and rewards) must reflect that dedication, or its followers soon detect the duplicity. Given that dedication of the organization to its mission, everyone joining the organization can appreciate and elect (or not) to commit to the mission...To be sure, not everyone who joins an organization will commit to its mission; but those persons are not professionals at arms and they are

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[59] Not to be confused with the term "careerism" in which an individual attempts to manage his career with only promotions in mind. This was also cited as a problem by Air Force leadership in the late 1980s. A reference for understanding the Air Force's with careerism and how the infusion of core values has been used to alleviate it can be found in the following *Air Force Times* article by William Matthews: "Careerism Battle Is an Old One," February 24, 1997, p. 16.

[60] For purposes of simplicity, the word 'airman' is used here. This is not to imply that this is the best answer to the question. Contemporary criticisms of the symptom of occupationalism have used this litmus test to demonstrate that many do not answer with a single, unified response.

[61] See Lt Col John Scherer's, *It's Time for the Basic Airpower School, Maxwell Air Force Base*, Alabama, April 1, 1996, for some an interesting anecdotes and extrapolation of this example.

not people that the organization should normally seek and reward. If the organization sends out mixed signals about its mission or its dedication to its mission, it can hardly complain if professionalism and commitment to the mission falter among its people.

Thus, I think that both the heart and soul have failed each other in the Air Force.[62]

CSAF Influences

As 1994 had begun with the publishing of Builder's *Icarus Syndrome*, it ended with the appointment of a new Chief of Staff of the Air Force. For the most part, the outgoing CSAF, General Merrill A. McPeak, was focused upon the early issues of transitioning the USAF from a Cold War to a post–Cold War service, which included the restructuring and reorganization of several functions to better meet national security demands, while addressing the military drawdown that had begun in the mid-1980s. Some of the specific activities that General McPeak influenced included the following:[63]

- the ***restructuring and consolidation*** of 13 major air commands into 7 major commands that included the formation of Air Combat Command, Air Mobility Command, Air Education and Training Command, and the Air Force Material Command;
- the ***reorganization*** of air wings and *flattening* of the air wing organizational structure;
- management of the largest ***drawdown*** of Air Force personnel in two decades from roughly 600,000 people in 1986 (height of Cold War spending) to approximately 422,000 by the end of 1994;
- the establishment of a ***new direction*** for the Air Force in it's "Global Reach Global Power" philosophy;
- design and implementation of a new officer personnel system that was based upon ***voluntary*** assignments;
- the changing of Air Force **fitness** standards;
- the design of a ***new Air Force uniform***

Although McPeak's tenure as CSAF will probably be remembered most for his vision to alter the USAF uniform,[64] in a broader context, this period in Air Force history represented several significant and likewise emotional events that are indicative of an organization going through a change process. Whereas the Air Force continued to manage declining resources and infrastructure, the retirement of General McPeak and the assumption of command by General

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[62] *Icarus*, p. xvii
[63] Kang, Stephanie, "Highlights of McPeak's Four Years," *Air Force Times*, November 7, 1994: p. 4.

Ronald Fogleman in October 1994 as the new CSAF, represented a significant transition from a

situation of controlling downsizing to what could be aptly termed as "introspective" and

"renewing." Some may even categorize this as an Air Force renaissance. What is meant by this

latter statement is that the organization began to look increasingly inwards in order to determine

its role in the novel, post–Cold War era. In an organizational sense, it appeared that USAF

leadership had gotten its arms around the issues of downsizing and was instead, moving in a new

direction. Examples of activities that occurred during Fogleman's watch included the following:[65]

- restoration of the *traditional* rank on the McPeak-designed uniform
- change to McPeak's officer assignment process that would be focused upon *involuntary* assignments instead of *voluntary* ones
- emphasizing to all servicemembers that they are *accountable* for both personal and professional actions[66]
- the development of a *new Air Force vision* focused upon global engagement
- the creation of *professional reading lists* for USAF servicemembers[67]
- the definition of the *Air Force Core Values*
- the creation of *Air Force Core Competencies*
- the development and testing of an *Airman's Basic Course (similar to the Marine Corps 'Basic Course')* to indoctrinate new officers into the culture of the Air Force.

From this list of activities, we can see that during his 1994-1997 tenure, General

Fogleman was extremely focused on getting back to basics—back to a definition of what it means

to be "blue" or part of the Air Force while defining a new vision for the Air Force of the 21st

Century. Whereas global engagement defined a roadmap for the types of weapon systems

required for the future, other efforts like defining core competencies, core values, and personal

reading lists could be interpreted as a "rebluing." In many respects, Fogleman's actions could be

viewed as an attempt to address the issues (occupationalism, stovepiping, and appreciation of

airpower history) that had been raised by individuals like Builder in the *Icarus Syndrome*. In

several documented interviews, Fogleman highlighted his approach as a means to change a

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[64] Kang, p. 4.
[65] Bird, Julie, "Milestones: Fogleman's Tenure as Chief," Air Force Times, August 11, 1997: p. 14.
[66] Two examples that demonstrated Fogleman's insistence on renewing accountability within the service included the discipline of seven officers who escaped prosecution during the April 1994 shootdown of two Army Black Hawk helicopters in Iraq; and his firing of three wing commanders after the April 1996 crash of Commerce Secretary Ronald Brown's CT-43 plane in Croatia.
[67] The reading list included four categories of books: classic war fighting, airpower, leadership, and space.

"climate of corrosion" and "culture of compromise" that could undermine the future of the Air Force.[68]

The Long-Range Planning Survey

Prior to implementation of many of the ideas presented in the previous section, there were various strategy sessions being conducted by Air Force leadership. Perhaps the most significant event to validate Fogleman's beliefs about the need for cultural change (and also which facilitated the eventual creation of the ASBC) was a survey conducted by AF/LRP (Long-Range Planning office; now AF/XPP) regarding senior leadership's perceptions of the health of the culture of the Air Force.

Known as the "Long-Range Planning Survey," the survey tool was constructed by Science Applications International Corporation (SAIC) and Wirthlin Worldwide.[69] The survey solicited opinions from 278 general officers, 157 senior executive service civilian personnel, and 109 senior enlisted advisors over a two-month period. The following issues were addressed by the survey:[70]

- their willingness to adopt change
- likely threats (enemies) to U.S. national security
- perceptions of contributions of air and space capabilities
- an assessment of the Air Force Core Competencies
- identification and prioritization of activities
- identification of better ways to develop commanders
- an assessment of the Air Force Core Values
- divestiture issues
- perceptions of how to best ensure the trust and confidence of the American people
- **the necessity for all new Air Force officers to attend a common training similar to the Marine Corps Basic Course.**

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[68] Matthews, William, "Soul Searching: Fogleman Presses the Air Force to Check its Moral Compass," *Air Force Times*, February 24, 1997: p. 12.
[69] Long-Range Planning Survey Briefing, August 1996: p. 1.
[70] Long-Range Planning Survey Briefing, August 1996: p. 2.

Results of the LRP Survey

The purpose of this section is to briefly highlight some of the results from the LRP Survey in order to lay a groundwork for the ASBC requirement. Many of these results support the issues presented by the *View* and Builder's *Icarus*.

How can we better train and nurture our best people to become great Air Force leaders and commanders?

Senior leadership recognized that nurturing junior officers is a key to transitioning and growing the service for the future. Given that young officers will be the leaders of tomorrow, it is necessary to guide and develop their skills as much as possible. The following responses were provided to the question above:

- ensure *mentoring*, expose junior officer to excellent leaders
- increase *breadth* of assignments
- provide earlier opportunities for *leading* and commanding
- enhance leadership *training* and schools
- require greater knowledge and understanding of *Air Force history* and missions, especially warfighting

In this case, senior leaders recognized the need for a strong mentoring and training program whereby junior officers could learn the best practices of their craft. Likewise, there was an emphasis upon having junior leaders reflect upon the history of the service very similar to Builder's recommendation regarding the need to understand airpower theory and history. Finally, the leadership emphasized the necessity for breadth of assignment in order to increase awareness in the junior officer. This last point appears to be aimed directly at decreasing the opportunity for stovepiping within a specific occupational specialty.

How can we better train and nurture our best people to become outstanding Joint Force Commanders?

Responses to this question emphasized that officers need to understand the concept of jointness of military operations:

- get younger officers into joint assignments
- create cross-service opportunities
- teach joint force doctrine within PME
- get to know other services' cultures

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Should core values get more attention in the future?[71]

During the time that the LRP survey was being administered to senior leadership,

General Fogleman had already begun creating a vision for the Air Force's value structure. In

January 1997 this vision was implemented by the publishing of the *United States Air Force Core*

Values (also known as the "Little Blue Book"). Fogleman stated in the preface of the book:

> The Core Values exist for all members of the Air Force family--officer,
> enlisted, and civilian; active, reserve, and retired; senior, junior, and
> middle management; civil servants; uniformed personnel; and
> contractors. They are for all of us to read, to understand, to live by,
> and to cherish.
>
> The Core Values are much more than minimum standards. They
> remind us what it takes to get the mission done. They inspire us to do
> our very best at all times. They are the common bond among all
> comrades in arms, and they are the glue that unifies the force and ties
> us to the great warriors and public servants of the past."[72]

Observing Figure 2.2, we see that the Air Force leadership considered an emphasis upon

core values for the future of the Air Force as being very important. A significant number of those

polled from each of the groups--senior officers (72%), senior civilian personnel (71%), and senior

enlisted (89%)--agreed that the USAF needed to focus upon the values issue. It is apparent from

these results that senior leadership viewed the Core Values as very important.[73] In their analysis

of the data presented at the LRP briefing, Wirthlin and SAIC formulated the following statement

as a summary of the information:

> When asked what they would recommend for core values in the future,
> the most common response was to keep attention on current core
> values; reinforce them all the time; provide training at all levels on core
> values, including leadership training. A number of respondents
> mentioned strengthening individual values, especially integrity and
> service before self (loyalty and commitment).[74]

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[71] For a comprehensive study of the development of Air Force core values, see Gregory J. Dierker, *Core Values: A History of Values-Related Initiatives in the Air Force*, Air University, 1997.

[72] *Air Force Core Values*, Preface section.

[73] See William Matthews, "Soul Searching: Fogleman Presses the Air Force to Check its Moral Compass," *Air Force Times*, February 24, 1997, for a more detailed description of the Fogleman initiative and how the values were developed and implemented.

[74] AF/LRP, Long-Range Planning Survey, p. 24. On page 34 of the briefing as well, it was stated that the top response to the question of how to best ensure the trust and confidence of Americans was that the Air Force should follow its core values.

Figure 2.2 An Emphasis on Core Values is Important

Aug 96 AF/LRP Briefing, p. 23
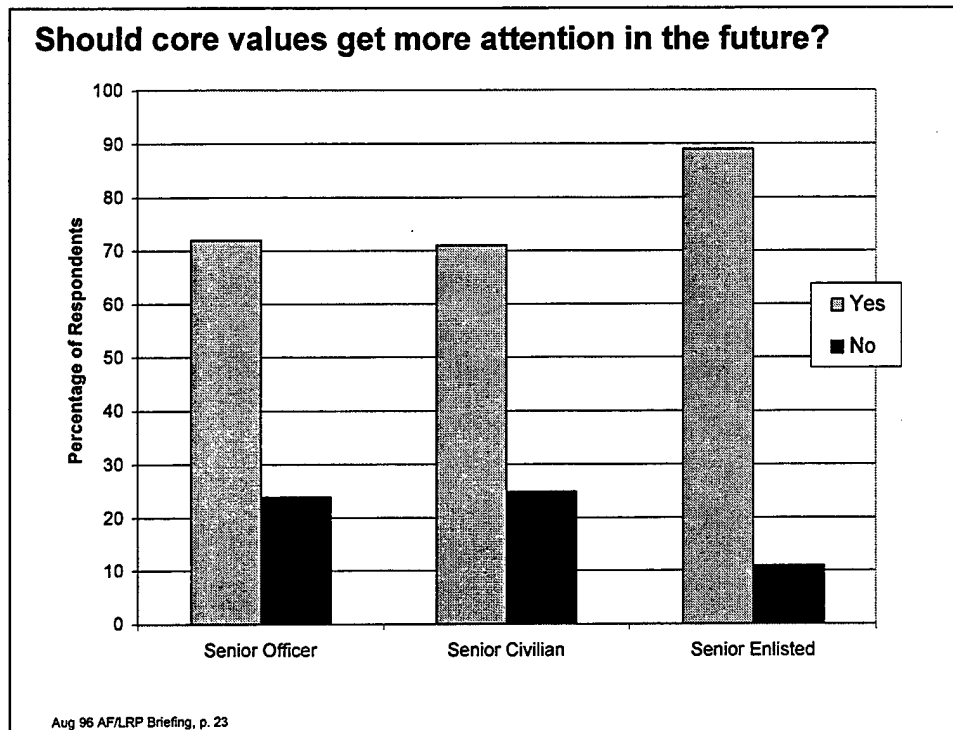
Should We Place a Higher Emphasis on Air Force Bluing?

To many in the Air Force, the term "Air Force Bluing" connotes indoctrination--similar to the ubiquitous basic training experience that each and every servicemember must complete. In line with Fogleman's vision of reinstilling values and appreciation of Air Force history into the service, Fogleman believed that everyone needed to be rebaselined (or reblued) to ensure that they understood the purpose of the organization. Important to this discussion and relevant to the genesis the ASBC's mission was the need to accomplish such bluing at the commissioning sources, PME programs, and basic training. Figure 2.3 addresses this issue and shows that senior officers and enlisted servicemembers tended to agree (96% and 83%, respectively) that a more proactive "bluing" should occur. Most senior civilians (60%) agreed with the statement as well; however, they were not as convinced as were the military servicemembers that it should be a priority.

Figure 2.3 Air Force Bluing of New Officers Should be Accomplished

To solidify institutional and cultural identity, the Air Force should institute more rigorous "Air Force bluing" orientation training at all sources of commissioning, basic training, and PME in residence

Aug 96 AF/LRP Briefing, p. 31
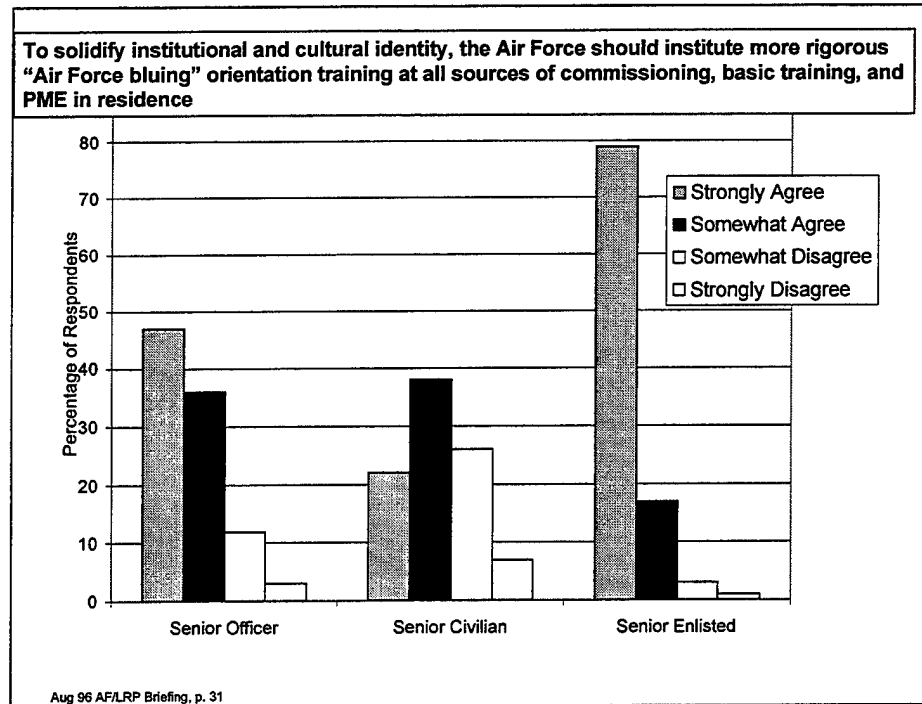
Should We Emulate the Marine Corps Training Model?

Perhaps best known for their commitment to "the Corps," Marines have established a standard that the Air Force has used to measure its very own commitment to service. During the mid-1990s, it was not uncommon to hear Air Force policymakers discuss the health of Air Force culture in relation to the commitments that Marines have.[75] Perhaps some of the discussions embellished the mystique of the Corps, but many would agree that there is something special about the Marine Corps system. Some of the specific traits that have been discussed within Air Force circles as "ideal characteristics" have included: the strong bond among the Corps' servicemembers, the selflessness of its people, and the credo that "one is a Marine first, and an occupationalist second."[76] This is by no means to say that all of these characteristics hold true

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[75] Bryant Jordan, "More Like Marines? Better Esprit De Corps for Officers is the Goal?" *Air Force Times*, November 11, 1996, p. 3.

[76] For further discussion on the subject, see Chris Lawson's "Marines instill Corps values," *Air Force Times*, February 24, 1997.

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for all Marines. But for USAF policymakers, it was clear that the Marine Corps model was one to

emulate and that The Basic School (TBS) program was at the heart of this model.[77]

Figure 2.4 shows the responses of USAF general officers and senior civilian personnel

with respect to the need for USAF officer to attend a common training program similar to TBS

(senior enlisted servicemembers were not asked to respond to this question). Both groups

overwhelmingly approved of the idea that a common program should be established (82% of SES

and 71% of general officers).

Figure 2.4 Common Training of All Officers is Necessary

All officers, regardless of commissioning source, should attend some common training (like the Marine Corps' TBS for example)

Legend:
- ▣ Strongly Agree
- ■ Somewhat Agree
- ☐ Somewhat Disagree
- ☐ Strongly Disagree

Data adapted from Aug 96 AF/LRP Briefing, p. 32
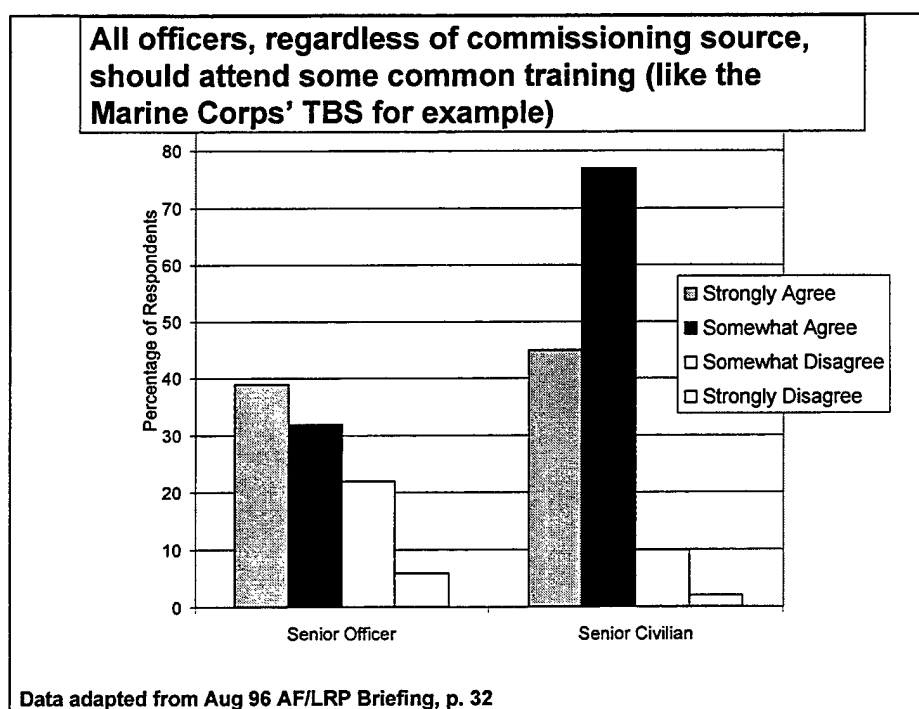
What are the implications of these results?

It is clear from the near unanimity of responses that the senior leadership of the Air Force

was interested in implementing the type of changes that General Fogleman had been discussing

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[77] TBS is required of all new Marine Corps second lieutenants. The training lasts 21 weeks and includes instruction in military knowledge, marksmanship, communications, logistics, and leadership. To graduate from TBS each Marine must demonstrate proficiency in three areas of evaluation: academics, military skills, and leadership.

during his tenure in the mid-1990s. Leadership indicated that core values needed to be stressed, that a common training program should be established for all new officers, and that a more-formalized process of "bluing'" was needed. Together, these three principles added credence to the next important milestone in the development of the ASBC: the *AF/LRP White Paper.*

The AF/LRP White Paper

The *AF/LRP Concept White Paper on Creating Shared Institutional Values* (also known as the "White Paper") was authored around the same time that AF/LRP conducted its survey of senior USAF policymakers. It served as the cornerstone of the ASBC concept and provided the catalyst for discussion of the new PME course at the fall 1996 CORONA. As the title of the document implies, the *White Paper* addressed the thesis that Air Force officers need a shared understanding of what it means to be an airman in the 21st century. Some of the specific problems the paper addresses include the following:[78]

- Air Force servicemembers (both officer and enlisted) lack a common view of what it means to be an airman.
- Air Force culture has encouraged the development of careerist attitudes.
- In public forums, Air Force servicemembers have not been able to tell the Air Force's "story" and establish the importance of airpower in the realm of joint operations.
- Most officers do not understand Air Force doctrine.
- Air Force culture does not value unit cohesion and loyalty to the institution.
- Leaders have not been effectively trained nor do they have the experience in knowing how to build unit cohesion and loyalty. An outgrowth of this lack of knowledge has been an absence of standards and uneven expectations across the Air Force.

These issues were similar in tone and content to material presented during the previous decade. Essentially, the LRP document did not present any new thoughts that hadn't already been discussed in *A View of the Air Force Today* or the *Icarus Syndrome.* Rather, the substantive worth of the document is that it provided an official position from the Air Force summarizing the issues that had plagued the organization. In other words, the Air Force was officially recognizing the problems that been quietly, privately discussed for so long. The paper

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[78] AF/LRP White Paper, p. 1.

also developed linkages between the organizational problems and the USAF officer corps (quotes are taken directly from the White Paper):

1. USAF officers do not understand the role of doctrine:

> As airmen we lack a shared understanding of the value of airpower in both current and future application. Air Force officers, in general, do not understand military doctrine to the same extent as other services. Air Force officers, in general, do not seem to be interested in warfare as an art and science, and do not see the value of this understanding in their job.

2. USAF officers do not appreciate military history:

> Air Force officers, in general, view the future very intently (maybe our technological roots). We are future oriented and comfortable with technology...however, we seem somewhat apathetic toward historical uses of military power and even airpower. It could be that our technological/future orientation makes us less interested in lessons of the past. It could also be that our fascinations with aircraft and the ability to fly them leads us to conveniently ignore doctrine that could ultimately evolve a more efficient method of achieving our objectives through means other than airplanes. In either case, this hurts our understanding of doctrine and our ability to provide context to the use of airpower.

3. There is a lack of shared values and experience among Air Force officers.

> The problem is epitomized in how Air Force officers view themselves. Some recent articles and many off-line discussions reveal that many support officers do not consider themselves warriors. One officer described the problem this way: "if you scratch a Marine, you get a Marine; if you scratch an Air Force officer, you get a pilot, a navigator, an intelligence officer, a contract officer, an analyst, and so on." We identify with technical specialties, not with the idea of being an airman. This may be rooted in the fact that we are high-tech or that we don't have shared experiences.

> Part of the problem may be dissimilar commissioning sources. While different sources provide diversity, the very existence of these commissioning sources (OTS, ROTC, Academy) with varying length/types of training create very different foundations. Yet, other services also have different commissioning sources but don't seem to suffer a similar lack of shared values to the same extent as in the Air Force. It could be that the other services train their officers in "warrior" tasks, whereas most AF officers are trained as support officers and therefore lack a shared sense of "warrior-ship."[79]

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[79] AF/LRP White Paper, 1996, pp. 1-2.

Impact of the Commissioning Source Structure

This last point is particularly interesting given that there had been little written on the contribution of commissioning source variance to the organizational problems confronting the Air Force. On the one hand, the commissioning source structure is able to provide a unique weave of different individuals--some would say that this structure is important for ensuring a robust demographic and skills mix. For example, the type of officer candidate who attends OTS is probably older, married, and more likely to have had enlisted experience than has a candidate from the Air Force Academy. Likewise, the ROTC program serves a more egalitarian historical purpose in that it draws from candidates from across the entire United States.

The *White Paper* implies that the differences in commissioning sources (methods, length of time, training) may contribute to the lack of a shared vision among the Air Force officer corps. Essentially, the division of commissioning sources has "cost" the Air Force in shared ideology and common experience that may otherwise be achieved--something the Marine Corps *does achieve* through its use of TBS. The main implication to be drawn from the current Air Force structure is that officers who graduate from differing commissioning sources are bound to have different perceptions of the Air Force culture and what it means to be an officer.

Absence of a Warrior Focus

Another important outcome from the *White Paper* is that the lack of shared values may have something to do with the fact that many Air Force officers do not view themselves (and their peers) as warriors. The "warrior" concept is something that has been discussed in Air Force circles for some time now. Specific emphasis has been placed upon how certain segments within the officer corps view themselves as warriors and others do not. For the most part, current Air Force culture implies that officers who are "operators" (pilots, navigators, aircrew members) are considered to be the warriors within the service, whereas support roles (acquisition, maintenance, etc.) are not. This line of demarcation has been a distinctive one with respect to career opportunities, promotion rates, and the amount of respect that is received. Many would contend

that officers (across different job specialties) are held to different expectations and standards than are their peers.[80] The bottom-line is that the Air Force has continued to struggle with defining who is a warrior and who is not and that this definition (and corresponding demarcation) has caused dissonance within the officer corps--dissonance that is directly linked to the absence of a shared vision within the service.

The AF/LRP solution to the issues discussed in this section was to institute a new PME program that is specifically targeted at newly minted officers from the commissioning sources. The next section describes how the course was officially approved during the fall 1996 CORONA.

Fall CORONA 1996:   A New PME Course Is Born

The CORONA conference is a semi-annual meeting of the top-ranking military and civilian leaders in the Air Force. As the *1997 Air Force Long-Range Plan Summary* stated: "at CORONA Fall 1996, the Air Force's most senior leaders stepped up to the issues of mounting global challenges and rapid technological change to develop a vision for the future."[81] Of particular importance to this dissertation was CORONA's focus career patterns within the Air Force. As part of this discussion, Air Force leadership considered the *AF/LRP White Paper* in the context of developing an air and space basic course (later to be named the Aerospace Basic Course) to solve existing organizational problems.

To achieve their goal of adapting to the changing nature of air and space power in order to refine its career development patterns of officer, enlisted and civilian forces,[82] the CORONA indicated the following:

> People are at the heart of the Air Force's military capability. People will be the **most important** element of the Air Force's transition to a space and air force. The composition of the total force will have to change alongside the changing nature of air and space power.
>
> The definition of the future operator must be redefined to accommodate a broadened approach to how we employ air and space power. Any military or civilian member experienced in the employment and doctrine of air and space power will be considered an operator. Non-

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[80] AF/LRP Briefing, "Airman's Basic Course," July 21, 1996.
[81] *The 1997 Air Force Long-Range Plan: Summary*, 1997, p. 1.
[82] *The 1997 Air Force Long-Range Plan: Summary*, 1997, p. 20.

operational support will increasingly become civilian or contractor-based. Each new officer, selected senior NCOs, and selected civilian interns will have a thorough knowledge of day-to-day capabilities of combined air and space operations. **The Air Force will create an Air and Space Basic Course to ensure its future leaders all share a full and common understanding of air and space operations.** Sending graduates from the new Air and Space Basic Course into operational jobs, before they perform their functional specialty, will develop and ensure a robust fighting force experienced in the employment and doctrine of air and space power.[83]

It is clear from this quotation that the CORONA group was intent on changing the Air Force culture by creating the shared vision that was described in the *AF/LRP White Paper*. The CORONA statement was clear in its direction to create the for the purpose of remedying organizational ills. Other outgrowths of the CORONA discussion included specific goals (referred to as "end states") that were to be achieved within the near future. Specific actions for achieving the end states were also described in the *Long-Range Plan Summary*. The following list (Figure 2.5) shows the end states and actions necessary to fulfilling each one.[84] Besides establishing ASBC, the goals of CORONA also included sending new ASBC graduates to operational jobs. The CORONA vision also called for a continuous review of the PME process to determine whether officers were receiving the right type of education needed for 21st century officership.

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[83] Ibid.
[84] Ibid., pp. 20-22.

Figure 2.5 End States and Actions Associated with the Creation of the ASBC

End State	Proposed Actions to Achieve End State
An *operator* is any military or civilian member who is experienced in the employment and doctrine of air and space capabilities	• Develop and implement a strategy for inclusion of civilians and military servicemembers into the fold as operators • Officers and selected civilians will receive training at the ASBC • Train Senior NCOs (via the existing PME process) with curriculum developed from ASBC
An ASBC developed for new officers and selected civilians ensures a common understanding of air and space power, history, doctrine, operations, joint warfighting, and core values by the year 2000	• Decide phase-in schedule for ASBC to include the following: funding, facilities, space, academic curriculum • Establish an oversight board external to the Air Force to assist in the development and updating of course curriculum • Have faculty and oversight board validate curriculum for the course to ensure it meets CORONA and Vision Document goals
Upon graduation from ASBC, most officers and civilians are sent to operational assignments	• Assess the total force impact of sending most officers and civilians to operational assignments prior to performing their functional specialty • Develop phase-in plan to introduce ASBC graduates into operational areas
A broad, continuing-education program exists at all command levels to guide the growth of all Air Force people in the tenets of the ASBC, from accession through retirement	• Develop a broad continuing-education plan to reinforce the tenets of ASBC for people throughout their careers

Outcomes and Implications

These outcomes are significant, to say the least. The Air Force officially recognized the problems that it was facing, it characterized them, and it decided that it would begin fixing them by focusing on the most junior officers within the organization. Why at the junior officer level? Perhaps the best answer to this question may be summarized by the reality of the disparateness between the commissioning sources and the fact that Air Force leadership looked at the junior officers as the future leaders of the organization. By infusing change at the lowest level of the officer corps, they hoped that the seeds would be planted for future change.

Since the CORONA meeting in 1996, the Air Force has taken several important steps toward fulfilling Fogleman's vision. Specific actions that have been implemented include the

genesis of a new organization at Maxwell AFB, the creation of a course curriculum that addresses

the perceived deficiencies, and the conducting of a test course to validate the benefits of the

freshly minted curriculum. Future plans for the course may include its definition as a new PME

requirement for junior officers in fiscal year (FY) 1999 and beyond based upon the assessment of

policymakers at the fall 1998 CORONA Conference. Chapter 3 discusses these thoughts in

greater detail and explores the curriculum development process that occurred at the ASBC

organization.

Chapter

3

Development of the ASBC Curriculum: Tactical Success in the Context of a Strategic Half-Miss

"The train has left the station...and we can't turn it around."[85]

I can't recall exactly how many times I heard this quote during my reserve tour at Maxwell AFB in 1998. At the very least, it was heard enough to provide focus to an important part of this dissertation. Typically, this phrase arose out of candid discussions with AWC, ACSC, AU, and ASBC staff that occurred during backroom, philosophical debates about what the Air and Space Basic Course was trying to achieve and how well it was achieving it. In some respects, referring to this phrase was a good way to end a conversation and return to the tasks at hand. In other ways, it was a catalyst for thinking more deeply about what the Air Force really needed, how AU had interpreted the need, and what CORONA 1996 had asked for: to solve some of the organizational problems that existed.

I liked this quote to such a degree that I decided to start out this Third Chapter of the dissertation with it as the backdrop for everything else that follows. There are two reasons for its purposeful inclusion to start this section. First, it describes the feeling that some of the people had at ASBC—the inertia of curriculum development had overcome the process for critical introspection with respect to whether or not the course was fulfilling its original charter. Secondly, this phrase speaks to the types of problems associated with organizational dynamics. The phrase implies a helplessness of sorts in the face of what appears to be a known outcome: "I know that we are headed in a direction that does not seem to be the right one, but there is nothing that I can do or say to stop it."

By the time that I arrived at the ASBC in the winter of 1998, approximately four months after the ASBC organization had been formally established, the train had not only left the station but also appeared to be barreling along the tracks at break-neck speed. Initially, it was not clear that the emphasis of the course was headed in the wrong direction. However, after comparing the CORONA 1996 vision relative to what ASBC was intending to accomplish, it was apparent that the spirit of this course would not be a perfect fit with the visionaries' original plan. In essence, the development of the course had taken on a form that appeared to be significantly watered-down relative to many people's expectations: it was shortened in duration relative to the 1996 vision, it was not physically rigorous, and it did not capture anyone's attention. Tactically, the course was well-developed with respect to curriculum methodologies and course execution; strategically, however, it was a half-miss: it addressed the factual (cognitive) aspects of learning, but it didn't proactively address the type of emotional (affective) change that was required. Figure 3.1 shows one example of the how the course significantly changed.

It is apparent from the timeline that the duration of ASBC decreased from a 16 week course in August 1996 to a four week version in October 1998. The USMC TBS course is provided as a reference to emphasize the relative change that occurred. The rationale for why the course was shortened during the timeframe were based upon many issues, but perhaps, the most substantives ones were the funding and facility constraints at Maxwell AFB. As will be explored throughout the remainder of this chapter, policy decisions to change the ASBC were focused upon financial constraints without consideration for the potential impact to the fidelity and rigor of the course.

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[85] Quote that I heard from several people associated with the development of the Air and Space Basic Course during my tenure at Maxwell AFB, AL.

Figure 3.1 Changes in Duration of ASBC (August 1996-October 1998)
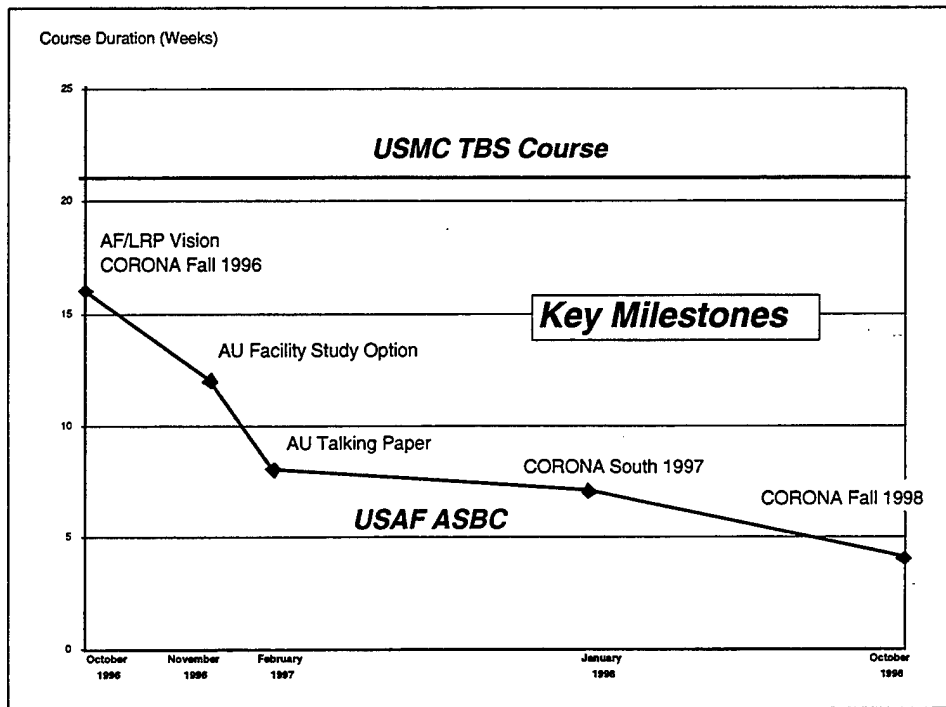
Original Vision for the ASBC: Make it Tough and Challenging

Expectations for the ASBC Curriculum

During the same summer that the idea for an ASBC was first being developed, AF/LRP developed their thoughts on what should be included in the curriculum. Discussions with the Air Staff indicated that they envisioned the course to be a challenging experience for all lieutenants who attended. The course was intended to mirror the USMC TBS program in both duration and difficulty. In one of the AF/LRP briefings that was given at CORONA, it stated that "Marines believe that it's worth indoctrinating all their officers in a 21 week basic infantry course...the Air Force idea is similar in that it will provide a common foundation and the fact that it places the importance of team ahead of the individual."[86] Not only did the Air Force leadership expect that new officers would learn about core values and Air Force history, but they were expected to build

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[86] AF/LRP Briefing entitled "Air and Space Basic Course," October 23, 1996, Chart number 38.

teaming relationships with other lieutenants in a way that would create lifelong bonds. Compared to the material presented in Chapter 2, the topics listed above were intended to resolve issues that the Air Force has been struggling with since its inception: namely, breaking down bonds across job specialties and commissioning sources; creating a sense of identity for what it means to be an airman; and placing the good of the service above individual desires. For the most part, the course was envisioned to include the following topics for study:[87]

- *Air* (ground school, aerodynamics, simulation, unmanned aerial vehicles, exercise)
- *Space* (orbital dynamics, operational simulation, exercise)
- *Information* (computers, communication technology, languages, operational simulation, exercise)
- *Doctrine* (Introduction, Air, Land, Sea, Joint)
- *Military history* (Air Force and non–Air Force)
- *Warrior skills* (martial arts, physical education, small-unit tactics, survival/evasion training)
- *Air Team Support* (logistics, maintenance, intelligence, communications, mobility, facilities, acquisition, medical), and
- *Other* (ethics, briefing skills, writing skills, leadership, staff tools).

Timing of Attendance

Expectations for the course included the attendance by all second lieutenants prior to their first assignment as Air Force officers: the reason for this timing was to provide all officers with the same knowledge prior to training in a specific weapon system and/or career field. In this light, the course was expected to last approximately 16 weeks and was intended to be both real and operational so that the young officers would be exposed to a myriad of situations that they may confront while on active duty. AF/LRP purposefully designed their curriculum topics in such a way that it would not be a clone of the already existing Squadron Officer School (SOS)--the professional military education (PME) course that captains attend.

Course Logistics

Another hallmark of ASBC was that it was expected to include a heavy emphasis of technology-based education tools including the use of wargaming, simulation, and operational

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[87] Manacapilli, Major Tom, Briefing of the "Airman's Basic Course," AF/LRP, July 21, 1996.

exercises. The instructors chosen for duty at ASBC were expected to be top-notch and drawn from across the spectrum of Air Force career fields. Participants would be graded, as individuals, on various aspects of the curriculum including: their own individual knowledge as evidenced by a myriad of cognitive exams, peer evaluations from their colleagues, and the use of team grades for team-related activities. At the end of the course, all participants would be required to participate in a multi-disciplined exercise that incorporated all of the topics listed above. The final exercise, as well as the entire 16 weeks of instruction, were intended by AF/LRP to be stressing upon the participants. In this context, 'stressing' refers to both physical and mental demands upon the students.

Air University Takes Control

After CORONA ended in the fall of 1996, AF/LRP did not play a significant role in the development of the ASBC. As its name implies, AF/LRP was in the business of long-range planning in a strategic sense and not the implementation of programs at the tactical level. In the case of ASBC, the tactics were left to the Air University at Maxwell AFB. A logical choice for developing a new course, AU is chartered to provide PME for all Air Force servicemembers, both officer and enlisted. AU has many years of experience with the development and implementation of Air Force education beginning in the 1920s with its development of the Air Service School.[88] Not only was AU tasked to develop a curriculum for ASBC, but it was also required to determine the operating aspects of the program: how much it would cost, what facilities would be used, and how the throughput of students would occur. Needless to say, AU had a significant amount of work to do from the time that the requirement had been established to the time that the course was conducted in the summer of 1998.

There were three specific activities that were undertaken. The first was focused on determining the facilities that would be required to house the ASBC. Two others involved surveys of personnel working at Maxwell AFB to determine how people felt about Air Force culture and the topics that should be included in the ASBC.

Additional Facilities for ASBC were Estimated to Cost Millions

In December 1996, the Air Force Center for Environmental Excellence (AFCEE) provided a briefing on a concept development study on the siting of ASBC alternatives at Maxwell AFB. The AFCEE was chartered to create facility requirements for two specific course duration options: one which assumed a throughput of 2,000 students (16-week duration) at a given time, and another option that examined the throughput of 750 students (6-week duration). The AFCEE study examined the availability for dormitory space at Maxwell and the type of facility costs that would have to be incurred to host the course.

What made this relevant to the development of the ASBC was that AU leadership had already postulated that a six week course was a better financial option relative to the original vision of 16 weeks that was presented by AF/LRP at the 1996 CORONA.

Given that AU was already home to several officer professional development programs, the addition of ASBC at Maxwell AFB required the Air Force to do one of three things: add capital infrastructure to house the additional number of ASBC; shorten the duration of other PME programs to make space for the ASBC students; or a combination of both of these options. In the end, four specific options (two for each throughput scenario of 750 and 2,000 students) were developed. Cost estimates for adding additional building and remodeling existing facilities ranged from $81.5 million to $296.9 million (FY99 dollars). The timeline for design and construction of the various options was estimated to take anywhere from 29 to 62 months.[89] Of all of the options presented, the one that was both the least expensive and the fastest to implement was the one that assumed a throughput of 750 students per course and a 6-week curriculum. This option was later briefed at the CORONA South meeting in the spring of 1997 as the best alternative for meeting the Air Force's goals with ASBC--the other option that considered a 16 week course was felt to be cost prohibitive and was never discussed.

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[88] "A Short History of the Air University," AU Web Page: http://www.au.af.mil/au/history/, December 31, 1998.
[89] Briefing entitled: "Air and Space Basic Course: Concept Development Study/Facilities," Maxwell AFB, Alabama, December 13, 1996.

It is important to note that as the decisions on course length were being made, there was virtually no emphasis given to whether or not the resulting course would address the substantive issues that CORONA 96 desired. For example, there was no study of the impact of decreasing the course length to less than the 16 weeks originally proposed nor was there ever any analysis done to determine how long it would take to present the core topics that were included in the AF/LRP proposal. In reality, the length of the course was defined first and the curriculum developers were tasked to fit as much material as they could into the timeframe specified. To many associated with ASBC, this series of events is what caused many to feel that the train had already left the station and would not be turning around. A more robust, and perhaps correct approach would have been to first define what was needed in the course and then to trade-off duration, costs, and throughput constraints against the material in the curriculum. This was never accomplished in a manner that explicitly compared the benefits relative to the costs.

Surveys of Air University Personnel

At the same time that AU was considering ASBC facility costs, it was defining the overarching curriculum topics that ASBC would include. To validate assumptions that the CORONA 96 group had made, AU solicited opinions from personnel located at Maxwell AFB. The material was intended to be used for the actual curriculum development, but discussions with staff at the ASBC organization indicated that the survey material had not been used to a great extent. The two surveys are titled

- The Shared Institutional Values Survey, and

- The Air and Space Basic Course Curriculum Structure Survey

Copies of the surveys are located in Appendices A and B of this report. Both surveys used a 5 point Likert scale (strongly disagree to strongly agree) to assess the degree to which respondents agreed with a statement on the survey. Demographic data was also collected on the respondents from which more specific research questions could be addressed.

Shared Institutional Values Survey

The Shared Institutional Values survey was designed to clarify assumptions concerning

USAF officers' knowledge of airpower doctrine, Air Force history, the benefit of teamwork, and the

adherence to Air Force values. It was delivered to over 1,200 students, faculty, and staff within

PME and OTS. The return rate for this survey was 65 percent.

The AU executive summary of the survey indicated that the quantitative data was

important in that it reinforced certain assumptions about Air Force officers that were discussed in

Chapters 1 and 2 of this dissertation. The following statements were asked in the survey (the

corresponding percentages equate to how many of the respondents agreed with the statement).

Air Force Officers:

- Understand the role of doctrine (46%)
- Share a common view on what it means to be an airman (46%)
- Persuasively articulate airpower doctrine (62%)
- Demonstrate careerist attitudes (61%)
- Identify with technical specialties (62%)
- Share values (81%)
- Value unit cohesion (87%)
- Obtain experience in building unit cohesion/loyalty (71%)[90]

Perhaps one of the more striking results of the survey was the fact that many of the

respondents felt that an ASBC should not be developed to address the issues that were raised by

the CORONA 1996 meeting. The following graphic shows how respondents answered the

following question: "The topics within this survey should be addressed by which of the following

methods?" The methods in this case referred to: the commissioning sources, existing PME

courses, continuing education professional courses, distance learning, training at the individual's

organization (unit), or the development of the ASBC as a new course.

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[90] Monday, Cheryl, "Executive Summary for Air and Space Basic Course Survey and Shared Institutional Values Survey," HQ Air University Plans and Operations Directorate Office of Academic Affairs, January 27, 1997.

Figure 3.2 Survey Respondents Assessment of How Curriculum Should be Implemented

Source: HQ AU/XOPA December 30, 1996
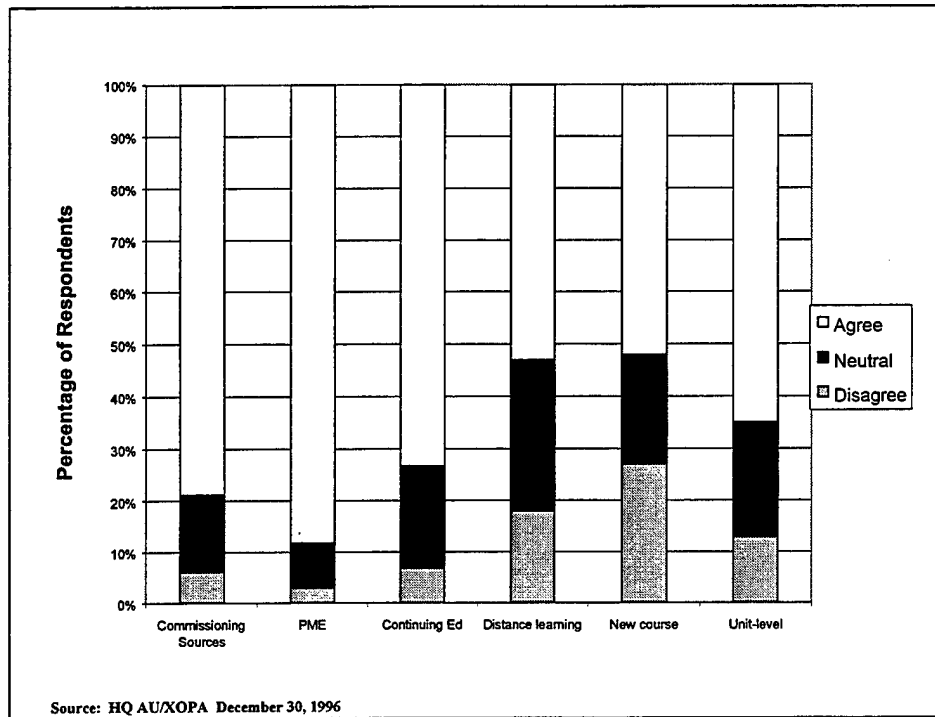
Figure 3.2 shows that the most favorable option was to enhance existing PME. The proposal of a new course (ASBC) gained only a 52 percent level of agreement relative to the 88 percent for the PME option. It is apparent that ASBC was not the first choice for providing the educational material.

The qualitative comments provided by respondents to the Values survey, for the most part, reinforced the quantitative numbers presented above. Many comments focused on the observation that careerism is extremely widespread, that many junior officers act like they are specialists in a civilian company, and that today's officer corps doesn't understand the benefits of teamwork and cohesion. Respondents supported strong core values, ethics, honor, integrity, teamwork, and knowledge of the AF mission and activities for the officer and enlisted corps. Perhaps the most striking area of the qualitative comments, and one which AU never publicly marketed, was the fact that many of the respondents felt that ASBC should not be added to the existing PME structure. Two direct quotes included the following:

> "There SHOULD NOT be a course for junior officers. Everything being
> suggested for the 'basic course' should be taught by the commissioning

sources. Then between their commissioning and SOS there needs to be a program in which self study, mentoring, and annual/semi-annual refresher training are accomplished... don't start another school!"

"I think PME should be much more emphasized at the commissioning source, and then be an individual study effort with testing like in the enlisted grades. It's embarrassing that our airmen and NCOs have a greater sense of history and responsibilities than officers do."

For the most part, respondents indicated that the existing PME structure should be capable of handling the issues. The individuals expressing such concerns suggested revisions to the existing programs be accomplished before significant time and resources were allocated to development of a new course or courses. If a course was to be developed, most felt the SOS program would provide a good model.

ASBC Curriculum Structure Survey

The ASBC Curriculum Structure survey was delivered to AU students, faculty, and staff roughly at the same time that the Shared Institutional Values survey was circulated. Over 1,500 instruments were delivered with a return rate of 79 percent.[91] The questionnaire was designed to solicit opinions from Air Force personnel as to what type of material should be included in the ASBC even though results from the Shared Institutional Values survey indicated that a large percentage of people felt that the ASBC should not be created. For the most part, respondents of the survey tended to validate the same aspects that AF/LRP presented in its proposal of what should be taught at ASBC. There were two types of assessments accomplished in this survey: the first measured respondents' agreement with the inclusion of specific topics in the curriculum and the second measured whether or not respondents thought it was important (and feasible) for the course to tackle certain goals.

The respondents to this survey indicated the areas of Honor/Ethics/Integrity (88%), Core Values (85%), Teamwork and Cohesion (84%), and AF Missions/activities (82%), should have a higher level of emphasis in a new course. Airpower doctrine received a high rating of 68 percent. The topic identified for the least emphasis is mentoring responsibilities of a junior officer. Figure 3.3 shows the topic areas as quantified by the average score of the Likert scale responses from

the respondents. As the Figure indicates, an average score of 4.5 to 5.0 was considered to be high by AU, an average between 2.5 to 3.5 was considered to be medium, and a score of 1.0 to 1.5 was considered to be low. All of the categories had overall average scores of at least 3.5 or greater. This implies that the respondents essentially thought that all of the categories were important for inclusion. Of the nine areas, the highest three average scores were: honor and ethics, core values, and cohesion.

Figure 3.3 Ratings of Curriculum Areas by Survey Respondents

	Overall	Civilian	Enlisted	Sr. Officer	Jr. Officer
Core Values	4.38	4.00	4.41	4.42	4.40
Honor/Ethics	4.56	4.18	4.67	4.55	4.59
Cohesion	4.32	4.14	4.43	4.23	4.38
Air Force Mission	4.18	4.17	3.99	4.28	4.25
Airpower History	3.60	3.56	3.37	3.73	3.66
Airpower Doctrine	3.81	4.06	3.51	3.95	3.83
Physical Fitness	3.67	3.38	3.63	3.66	3.81
Current Events	3.61	3.90	3.42	3.55	3.77
Mentoring	3.56	3.76	3.56	3.42	3.68

High	4.5-5.0
	3.5-4.5
Medium	2.5-3.5
	1.5-2.5
Low	1.0-1.5

Source: HQ AU/XOPA December 30, 1996

The second set of measures used by AU in the Curriculum Structure survey were focused on capturing respondent's affirmation of whether or not the course should achieve five goals. The goals were similar, in content, to the one's presented by AF/LRP as the purposes for having an ASBC. Respondents were asked to assess two specific aspects for each goal: 1) was the goal important enough to be included in the ASBC curriculum structure and 2) could the goal be accomplished? The five goals and aggregate survey responses from each are summarized in

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[91] "Air and Space Basic Course Curriculum Structure Survey," HQ Air University Plans and Operations Directorate Office of Academic Affairs, January 27, 1997.

Figure 3.4. Similar to the previous survey, a five point Likert scale was used to assess respondents' perspectives of the various goals.

- Goal 1 (G1): To establish a bond among the junior officers corps that 1) reflects a shared vision of them as integral parts of the Air Force team (a shared sense of identity and outcome--who are we and what are we about), and 2) develops camaraderie from having shared common experiences rooted in a common set of core values and ethical code of behavior.
- Goal 2 (G2): To prepare the junior officer corps to become airpower advocates through 1) the study of airpower history and doctrine, 2) the study of great AF leaders, and 3) participation in exercises and simulations that stress the critical nature of support to operational success.
- Goal 3 (G3): To maintain physical and mental fitness. To instill a personal desire to maintain individual wellness.
- Goal 4 (G4): To heighten junior officers' understanding and appreciation of the potential effects of current world events on national security and the Air Force.
- Goal 5 (G5): To prepare junior officers to accept personal responsibility for mentoring.

It is apparent from Figure 3.4 that the respondents agreed that all of the goals were important and that they could be achieved within the context of the ASBC. Overall, Goal One was rated the highest of the five--this goal focused on the necessity for junior officer to bond together. Goal Five was rated as the lowest in terms of importance, but for all practical purposes, it was still rated at a high level as well.

Figure 3.4 ASBC Curriculum Course Goals and Ratings by Respondent Category

	Overall	Civilian	Enlisted	Sr. Officer	Jr. Officer
G1: Important element	4.10	4.10	3.90	4.15	4.23
G1: Can be accomplished	3.84	3.91	3.82	3.76	3.95
G2: Important element	3.97	4.09	3.78	4.08	3.97
G2: Can be accomplished	3.90	4.09	3.77	3.90	3.95
G3: Important element	3.89	3.58	3.92	3.82	4.06
G3: Can be accomplished	4.00	3.97	4.05	3.95	4.01
G4: Important element	3.94	4.25	3.89	3.81	4.06
G4: Can be accomplished	4.00	4.27	3.87	3.97	4.06
G5: Important element	3.74	3.97	3.90	3.54	3.80
G5: Can be accomplished	3.68	3.81	3.84	3.49	3.74

Agree	3.5-5.0
Neutral	2.5-3.5
Disagree	1.0-2.5

Source: HQ AU/XOPA December 30, 1996

How Were the Surveys Used?

Although the two surveys provided some interesting information, it was not clear how the results of the surveys were used. In the first place, AU did not appear to use the results from the Shared Institutional Values survey: the survey results recommended that AU should not develop an ASBC but should modify the existing PME courses instead. Review of the AU analysis and results summary indicated that AU marketed the results in a favorable way that supported the establishment of a separate ASBC PME course even though the survey did not support such a conclusion. It is not clear if senior policymakers at AU were privy to the detailed results from the survey. Secondly, it did not appear that there was any correlation between the results of the Curriculum Structure survey and the ASBC curriculum. For example, results of the Curriculum Structure survey indicated that camaraderie was an important facet to be emphasized during the ASBC, but the final curriculum did not address this topic in a way that would develop specific

types of outcomes. This same conclusion was similar for other qualitative types of desired outcomes as well.

A final critique of the surveys was that they did not address the subject of how much time should be spent on the respective topics. For example, many of the subject categories were rated high, but respondents were never asked to assess how much time would be appropriate for the course or the subjects of instruction. Some unsolicited, qualitative comments from the surveys indicated that ASBC should be longer than the seven weeks that captains spend at SOS while others indicated that it should be shorter. In general, it appears that the surveys were used as an exercise to justify the existence of the ASBC without providing any substantive input into the final design.

Comparison to the Marine Corps TBS Program

> "When you ask a Marine, What are you? the Marine says: I'm a Marine. When you ask someone in the Air Force, they say: I'm a pilot, or a navigator, or a personnel officer, or whatever; they don't say, I'm an airman. We need to change that."[92]

Relative to the Marine Corps culture, many Air Force leaders felt that the average Air Force officer was not bonded to a unifying theme of what it meant to be an airman. General McGinty's quote is one of the most replicated during this timeframe. As Chapter 2 of this work pointed out, however, the same issue has been in existence for awhile now. In the same way that McGinty envied the Marine Corps culture, many Air Force leaders thought that replication of Marine Corps education and training would solve the problems that the Air Force faced. As seen in the AF/LRP White Paper and other policy statements during the fall of 1996, it was clear that the Air Force was trying to approximate a TBS type program when it originally conceived of the ASBC:

> "As the Air Force prepares to reinvent itself for the next century, its top generals also are looking at ways to build better officers. Tearing a page from the Marine Corps' officer training book, the Air Force apparently is planning on introductory programs that all new officers and even some civilians will go through before their first assignments.

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[92] Lt General Michael McGinty, Deputy Chief of Staff for Personnel, U.S. Air Force, in a talk to airmen at Eilsen Air Force Base, AK, October 31, 1996.

Just as Marine training is designed to make new officers into Marines first, then direct them into specialties, the Air Force hopes to make its officer corps and selected civilians think of themselves first as airmen...The new course would be designed to give officers and civilian workers a comprehensive understanding of air and space operations. And in a radical departure from the current system of how officers begin their careers, future graduates of the to-be-established basic course would move first into an operational job as a first assignment, before moving into a career specialty."[93]

And in another quote:

"Looking to strengthen the professionalism and dedication of the officer corps, the Air Force chief of staff declared November 21, 1996 that the service will establish an Air and Space Basic Course, modeled after The Basic School for Marine Officers. General Ronald Fogleman told Navy Times that Air Force leaders are seeking to instill in their new officers the same core values, sense of purpose, and doctrinal awareness that newly commissioned Marine lieutenants have for their Corps."[94]

Although Fogleman claimed that the ASBC program would not attempt to make Marines out of Air Force officers, he emphasized the benefits that the TBS program had provided for the Corps. In 1994, 2Lt Todd Weiser, a recent Air Force Academy Graduate, attended the TBS for the purpose of developing lessons learned to improve Air Force Academy's curriculum. In Weiser's report to the Superintendent at the Air Force Academy, he stated:

"I felt better prepared as a Marine Corps second lieutenant graduating from The Basic School than I did as an Air Force second lieutenant graduating from the Air Force Academy."[95]

This is a rather compelling statement given Weiser's recent graduation from the Air Force Academy--the Air Force's flagship program for officer commissioning. From this statement, it is clear why leaders like Fogleman looked toward TBS as a model from which the Air Force could develop its own basic course. Weiser also highlighted several things that he learned from TBS. In his final report, Weiser indicated that TBS:[96]

- Understood training and took it seriously
- Provided a solid military skills foundation
- Emphasized and held standards
- Provided continual challenges

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[93] Jordan, Bryant, "More Like Marines," Air Force Times, December 18, 1996, p. 2.
[94] Lawson, Chris, "They Want to Be Like US!" Navy Times, December 16, 1996, p. 13.
[95] Weiser, Second Lieutenant Todd L., "Marine Corps Basic School and Cadet Program Proposal Brief," April 8, 1994.
[96] Ibid., p. 8.

- Put every student in different type of billets (jobs)
- Instilled unit pride, teamwork, and distinction
- Provided solid officer role models
- Preached mission accomplishment

What is TBS?

TBS is the primary officer training school for every Marine Corps officer, regardless of commissioning source (Naval Academy, Reserve Officer Training Corps, or Officer Candidate School) or career specialty.[97] The Marines view TBS as its foundational course for all officers:

> "All Marines, enlisted and commissioned, junior and senior, will be educated to act intelligently and independently, trained to seek responsibility, and expected to act with boldness and individual initiative. Regardless of specialty, all Marines will be trained first as riflemen, able to defend themselves and their units. We will forge these highly capable individuals into flexible yet unbreakable units, and into a single Marine Corps, through the enduring bond of our unique esprit."[98]

The program lasts approximately 21 weeks and is located at Quantico, Virginia. It is the oldest school in the Marine Corps (has been in existence since 1891) and is comprised of three general training and evaluation areas: academic, leadership, and skills. The academic portion of the curriculum refers to basic military knowledge like history, customs and courtesies, and professional responsibilities. The leadership section includes time spent leading others and fulfilling leadership positions. Skills training refers to physical fitness and other military activities like rifle marksmanship and orienteering. The number of contact hours provided (some 1400 in total) is equitably distributed among the three areas.

Each officer that graduates from TBS does so with a basic working knowledge of the Marine Corps and specific skills associated with leading as an infantry platoon commander. The material that is taught at TBS is considered to be foundational in the sense that it provides a solid base of military skills, regardless of specialty. The TBS curriculum covers a broad range of topics; everything from administrative skills like filling out promotion reports, to tactical operations.

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[97] For a thorough description of TBS, see Weiser, Second Lieutenant Todd L., "Marine Corps Basic School Training Report and Cadet Program Proposal," March 29, 1994.
[98] "Concepts and Issues: The Marine Corps–Forging Today's Force for Tomorrow's Battles," Chapter 1, located at: http://www.hqmc.usmc.mil, March 12, 1998.

Standards

The training emphasizes standards and grades for each activity that is accomplished. To graduate, the lieutenants must achieve an overall average score of 75% for the entire course. Lieutenants that don't meet the standards are required to repeat TBS.

Mentally and Physically Challenging

Aside from the standards that have to be met for graduation, the entire 21 week program mentally and physically challenges the participants, the difficulty of activities becoming progressively higher with each passing week. For example, in the beginning of the program, a typical run or hike may be a couple of miles, but by the end of the program, students may hike as far as 20 miles. Challenges like these are key to instilling pride and developing motivation. Field activities are also considered to be difficult, but students feel a great sense of accomplishment upon completing the physical and mental hardship. The fact that the participants are required to cooperate as teams to get through the activities further enhances the sense of teamwork and bonding that occurs.

Methods of Instruction

Aside from the functional information that is provided to the students at TBS, there is an emphasis upon the methods of instruction. The officers who serve as instructors at TBS are considered to be the Marine Corps' top officers. They provide mentoring to the students and participate in all of the physical activities. Aside from the long hours and time on weekends, the duty is not an easy one--commitment to the success of the students is considered to be paramount. The officers who are selected to instruct at TBS arrive at TBS directly from the field and represent all career specialties within the Marine Corps. The instructors emphasize that accomplishing the Corps' mission is the most important priority for all to achieve followed by teamwork and taking care of people.

How was the TBS Model Used in Developing the ASBC Curriculum?

Even though the TBS program was used in the initial proposal by AF/LRP at the 1996 CORONA, ASBC never actively compared how it was designing its curriculum vis à vis the TBS program. Curriculum developers did not attend TBS nor did they study the TBS agenda to understand the composition of components. There was no comparison of cognitive and affective elements. There was no invitation of TBS staff to participate in the development of the ASBC. There was no outside critique of the ASBC from TBS experts to provide a check on whether or not the Air Force's course met the same type of spirit that TBS captures. In an even more general context, neither ASBC nor AU compared the original vision to the TBS model.

Handoff from AU to ASBC: Curriculum Building Commences

Although ASBC was not designated as an official organization until September 1997, AU and ASBC staff had already begun examining potential topics for inclusion into the curriculum by the Spring of 1997. This timeframe marked a transition for ASBC as AU participated less in the development of the course. One key activity that specifically signaled the transition was ASBC's completion of a curriculum gap analysis.

Trying not to Repeat Previous Experience

Through early summer 1997, ASBC personnel conducted a review of the officer commissioning source programs to determine what material (and to what extent) was being taught to the officer candidates. Given the recency of the participants' commissioning experience, there was a concern that material presented at ASBC could potentially be a rehash of topics already studied and ASBC did not want to present material that students had already been exposed to. In a June 1997 letter to the ASBC Commandant,[99] staff summarized the commissioning programs' curriculum. The analysis was based upon a detailed review of not only the individual curriculums of the commissioning sources, but also upon a September 1995

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[99] Letter to the ASBC Commandant Regarding Curriculum Gap Analysis, June 4, 1997.

document[100] that summarized in an agreement of the type and scope of topics that the

commissioning sources agreed to teach. The following observations were considered to be

common themes between the commissioning sources and the goals of the ASBC[101]:

- Comprehension of the unique aspects of the military as a profession.
- Application of personal physical fitness and wellness goals to a level consistent with Air Force standards.
- Application of group and team dynamics and processes .
- Comprehension of key historical relationships between events and personalities in the development of military concepts, doctrines, strategies, and the profession of arms.
- Comprehension of how selected elements of the United States government and the national security policy process function.
- Comprehension of selected elements of current US military forces, doctrine, and employment capabilities.
- Comprehension of selected national and international determinants and constraints which influence the use of national power.
- Comprehension of Air Force policies on officer interactions with the media.
- Application of effective speaking principles under Air Force policy to communicate the Air Force message.

Aside from the themes provided above, ASBC staff also conducted a detailed accounting

of the types of topics (and time) that the commissioning sources had conducted. Figure 3.5

shows the amount of hours by subject area. In general there are three observations that can be

made: 1) the commissioning sources spend different amounts of time on similar topics, 2) the Air

Force Academy covered all of the topics the most thoroughly of the three commissioning sources,

and 3) there is significant overlap between the topics that ASBC covers and what the

commissioning sources are teaching.

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[100] September 20, 1995 Curriculum Engagement Memorandum of Understanding (CEMU)
[101] Letter to the ASBC Commandant Regarding Curriculum Gap Analysis, June 4, 1997.

Figure 3.5 Content Analysis by Commissioning Source and Topic

Source: Air and Space Basic Course "Gap" Analysis, June 1997
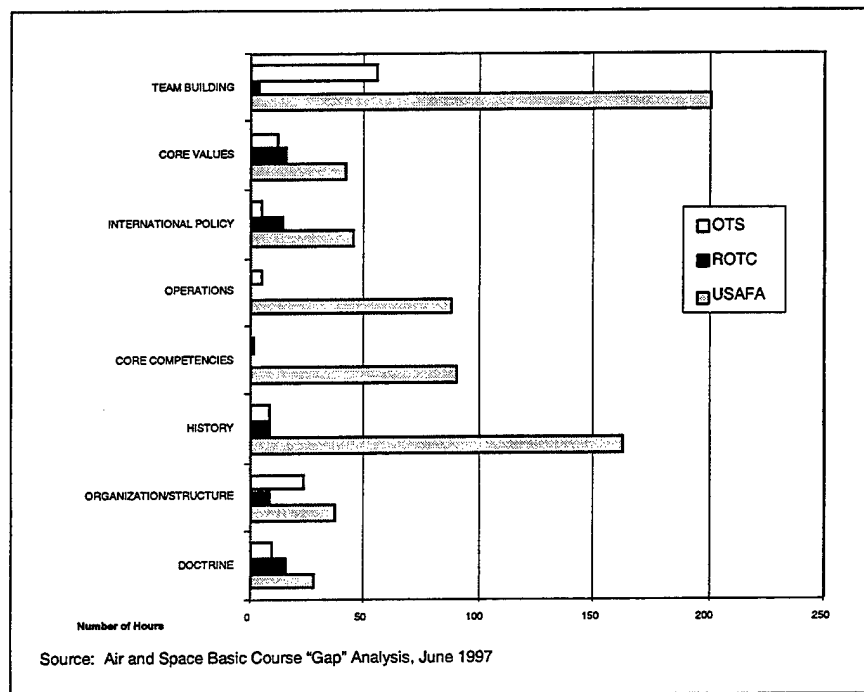
Integration of Thought

Following an analysis of the 1996 Fall CORONA tasking, the 1997 Air Force Long Range

Plan, Air University Surveys, and the gap analysis, the founding ASBC cadre derived the

following mission, vision and goal statements:

MISSION

To inspire new USAF officers to comprehend their roles as Airmen who understand and live by USAF Core Values, articulate and demonstrate USAF Core Competencies, and who dedicate themselves as warriors in the world's most respected Air and Space force.

VISION

ASBC ... a dedicated team of Air and Space professionals, building on the foundation of newly commissioned officers; ensuring future Air and Space Power leaders are Airmen first, dedicated to USAF Core Values and Core Competencies and the continual, careful study and understanding of Air and Space Power Doctrine and Warfighting.

GOALS

Through a dynamic, shared experience, ASBC seeks to develop lieutenants into 21st century Airmen who can:

- articulate and demonstrate USAF Core Competencies with a firm grounding in Air and Space history

- understand and exemplify the inherent strength found within the USAF Core Values

- responsibly advocate how 21st century Air and Space Power can contribute to successes in joint operations

- value team achievement over individual success

Translating the Vision into a Plan

Interviews with staff indicated that their vision of the ASBC curriculum development tasking was to develop an in-residence PME prototype course, between six and eight weeks in length, to meet these objectives. Furthermore, ASBC was expected to minimize passive learning and implement as many hands-on experiential applications as possible, with an eye towards using modern technology to pique student interest and enthusiasm.

Given this vision and mission, ASBC then developed a strawman curriculum that was primarily focused on conveying the USAF Core Competencies and Core Values. The plan was to address each Core Competency in a three-step process: lectures, case studies, and application-oriented exercises. Through a series of auditorium lectures and interactive seminars, ASBC showed the historical development of the core competencies and how the Air Force supported each one in the context of the national security of the United States.

ASBC taught the Core Values section of the curriculum in much the same way as the Core Competencies section. However, more emphasis was placed on ethical situations that officers might face within the first two years of active service. In addition, ASBC staff looked for opportunities throughout the curriculum to reinforce and operationalize the Core Values beyond the usual case studies.

The final method for conveying information was through the *Blue Thunder* exercise. ASBC curriculum designers decided to include a capstone wargame in order to integrate the theoretical portion of the curriculum. Specific focus was given to addressing the Core Competencies and Core Values. The exercise was expected to be a realistic, stressful and action-oriented activity that provided an "Airman's view" in a joint warfighting environment. *Blue*

Thunder demonstrated how the Air Force plans to operate from both the Air Operations Center (AOC) and Wing Operations Center (WOC) environments. This provided the students both operational and tactical perspectives of airpower applied in war.

The Curriculum Development Process: A Tactically Sound Approach

Organizational Structure and Delineation of Responsibilities

To accomplish the ambitious plan of developing a curriculum within a year, ASBC divided the Curriculum Directorate into four divisions: History and Core Competencies, Core Values and Ethics, Operations and Doctrine, and Wargaming. Figure 3.6 shows the ASBC organizational structure that was implemented to develop the course.

The division of responsibility was made purposefully in order to emphasize the importance of each topic. An experienced individual, with a background in curriculum development at Air University, led each division. The History and Core Competencies Division showed the historical development of each core competency and provided the historical underpinnings to help the students comprehend the importance of each Core Competency. The Core Values and Ethics Division demonstrated how Core Values permeate every aspect of USAF life and operations. The Core Values and Ethics Division also had the task of instilling the values of teamwork over individual achievement in students. The Operations and Doctrine Division showed how the USAF currently provides the Core Competencies to our nation in both war and Military Operations Other Than War (MOOTW) settings. The Wargame Division designed the capstone wargame, Operation *Blue Thunder*. Because no existing wargames met the needs of the ASBC vision, the wargaming division elected to build an organic capability that was technically based on the Air Force Command Exercise System (ACES) engine and the Operation Atlantis II scenario currently under development by SOS. This made maximum use of the resources available to us at the Air Force Wargaming Institute (AFWI).

Figure 3.6 ASBC Organizational Structure[102]

ASBC Structure

COMMANDANT
CC

EDUCATIONAL ADVISOR CA

INFORMATION MANAGEMENT CCA

VICE COMMANDANT CV

EXECUTIVE OFFICER CCE

OPERATIONS EDO	CURRICULUM EDC	MISSION SUPPORT EDS	EVALUATIONS EDV
PERSONNEL EDOP	PLANS & PROGRAMS EDCX	SUPPORT EDSS	EVAL
RESOURCE MANAGEMENT EDOR	CORE VALUES & ETHICS EDCE	RESOURCES EDSR	
COMMANDER'S ACTION GROUP EDOX	HISTORY/CORE COMPETENCIES EDCC	FIELD ACTIVITIES EDSD	EDUCATIONAL APPLICATIONS/ CUBIC
	OPERATIONS / DOCTRINE EDCO		
	WARGAMING & SIMULATION EDCT		

Use of the ISD Model

It is clear from a detailed analysis of the ASBC organizational structure and the thorough curriculum development process that the ASBC staff did a very comprehensive job of developing academic material within the tight time constraints that were imposed upon the organization. The staff followed prescribed Air Force methodology for developing the material and conducted a myriad of quality reviews and testing of the course. Some of these will be discussed in Chapter 4. In many ways, the organization did an excellent job of tactically executing its plan.

The ASBC curriculum, by Air Force policy directive (AFI 36-22, 1995), was designed and managed using the USAF Instructional Systems Development (ISD) Model (AFI 36-2234, AFI 36-2235). This model for developing curriculum is considered to be an established benchmark within educational curriculum circles. Educators such as Benjamin Bloom, John Dewey and Ralph Tyler

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[102] Richard D. Rogers, "History of the Air and Space Basic Course: September 12, 1997 - June 30, 1998, " Draft Report, January 1999.

had used the model or had advocated its use in developing novel academic curriculums.[103] The ISD Model requires identification of the educational needs of the target population and the development of specific measurable educational objectives based directly on these needs. The ASBC asked Air Force personnel to provide input into the curriculum through supervisor surveys, workshops, conferences, and curriculum review panels. Consequently, Air Force managers had a significant input into identifying the educational needs of the student population. Specific, measurable, educational objectives were then developed based on identified needs. Subsequently, test items were developed to determine if the students had achieved the objectives.

The Curriculum Planning Board

A Curriculum Planning Board (CPB) was responsible for ensuring that the ASBC met the educational needs of the newly commissioned Air Force officers. The CPB was composed of senior faculty from each department of the school – curriculum, program evaluation (tests and measurements), and operations (teaching faculty). An educational specialist, with a doctorate degree, served as the technical advisor to the board. All members of the CPB were internal to the ASBC. The CPB reviewed the development of all course documents of the school including: course goals and objectives, lesson plans, and teaching methodologies. Essentially, the CPB served as the quality control mechanism for the ASBC curriculum.

The primary course control document that the CPB used was called the plan of instruction (POI). The POI included: the general educational objectives, specific learning outcomes, main points, and instructional methodology. Each general objective consisted of two parts – a cognitive level of learning, using Bloom's Taxonomy,[104] and a clearly stated subject. A minimum of three specific learning outcomes (also referred to as samples of behavior)[105] were developed from each general lesson objective and written as behavioral statements to provide

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[103] Eisner, 1985.
[104] Bloom, B. S. (Ed.), Taxonomy of educational objectives - Handbook 1: Cognitive domain. New York: Longman, 1980.
[105] Gronlund, 1985; Brennan, 1981

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significant and measurable evidence of achievement of the general educational objective.[106]

Once the general and specific instructional objectives were developed, a content outline identified major divisions of the module. From the content outline, ASBC curriculum writers developed basic and detailed teaching outlines and instruction plans for all lessons. The curriculum writer submitted the draft lesson plan to the CPB for review.

Finalized Curriculum Structure

The process described above resulted in a detailed curriculum structure that addressed the cognitive aspects of what CORONA desired. Figure 3.7 shows the timeline of activities that occurred during the seven weeks of ASBC instruction. Figure 3.8 shows the distribution of time by the various activities. It is apparent from these graphics that the instruction time is focused most heavily upon the education of operations and doctrine. It is also apparent from a review of the final structure that well over 85% of the contact time at ASBC was spent in a traditional academic setting: classrooms, lecture halls, and auditoriums. The remaining time was spent in athletic fields like playing ultimate frisbee or in the Blue Thunder exercise.

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[106] Gronlund, 1985; Blodd and Budd, 1972

Figure 3.7 Timeline and Description of Course Activities

Weeks

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

•Pre-Test
•National Security
•Concept of Warfare
•Case Study Analysis
•Concept of the
 Warrior
•Academic Quiz #1
•Fitness Screening
•Team Building
•NCA Order Warning

•Case Study in Core
 Competencies
•Total Force Picture
•Total Force Exercise
•Total Force
 Application
•Academic Quiz #3
•Core Values case
 study
•Ethics team building
•CJCS Planning Order

•Deployment Planning
 Exercise
•Deployment Planning
 Case Study
•Academic Quiz #5
•Case Studies for Junior
 Officers
•CJCS Deployment
 Preparation and
 Deployment Orders

•Wrap–up wargame
•Sustainment
•Conflict termination
•Redeployment
•Coalition Operations
•Forces of Change
•Post-test
•Exit survey
•Training Reports
•Graduation

•Role of Doctrine
•Modeling & Applying
 Doctrine
•Air and Space Power
 Doctrine
•Air and Space Power
 Strengths and Limits
•Case Study in Core
 Competencies
•Academic Quit #2
•Fitness Program
•Team Building
•Mentoring
•CJCS Warning Order

•Employment Planning
•Air Campaign Planning
•Academic Quiz #4
•Core Values/Ethics
•CJCS Alert Order
•MOOTW Simulation
•Deployment Planning
 Exercise

• Deploy to field and
  execute the air plan
• CJCS Execute Order
• Demonstrations and
  Simulations

Source: ASBC (September 1998)

Figure 3.8 Number of Course Hours by Curriculum Area

Hours

Curriculum Area	Hours
Admin	11
History and Core Competencies	34
Core Values/Ethics	18
Operations & Doctrine	90
Wargaming	42

72
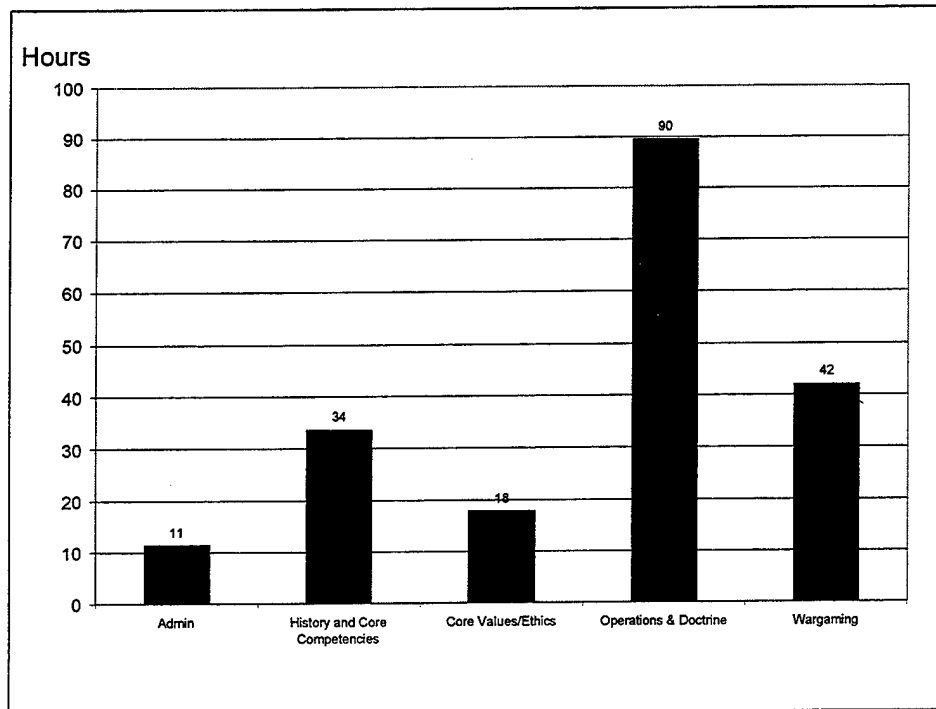
Did the ASBC Curriculum Fulfill the CORONA Tasking?

In some ways it did; in others it did not. It is clear from the previous discussion that the curriculum planning process was very methodical and accomplished with the utmost of professionalism by the ASBC staff. From a tactical perspective, they flawlessly implemented the curriculum development. They were given specific constraints of course length and attempted to meet the objectives accordingly. Even though the organization was able to tactically execute the program, it was not clear, however, if the course had addressed all of the needs that had been expressed in the original CORONA vision that were required to change the Air Force culture.

The following chart, Figure 3.9, compares and summarizes the main point associated with ASBC, the AF/LRP vision, and TBS. There are three things that are striking when reviewing the material: 1) the course length changed significantly from its original vision; 2) affective learning outcomes were not emphasized; and 3) the ASBC was not physically demanding. In this context, the course was a strategic half-miss: it addressed the cognitive aspects of the CORONA tasking, but it did not address the affective ones.

As previously highlighted in this chapter, the course length changed significantly since the original vision was established in 1996. By itself, a change in duration is not enough evidence to support a hypothesis that things should have been done differently. However, when one considers that the original plan for ASBC was to mirror the TBS program in both difficulty and duration, it is clear that the course did not accomplish this goal. Similarly, when one considers that the test course was less than one-third as long as TBS and that expectations for the final version of the ASBC may be less than one-fifth as along as TBS, it is unreasonable to think that the course could be nearly as viable. Examination of the type of physical and emotional demands upon the students at ASBC relative to TBS demonstrates a stark contrast with respect to the differences in the methods of instruction.

- Whereas TBS emphasized ten mile hikes to promote physical fitness and camaraderie, ASBC used the game of ultimate Frisbee
- While TBS participants are graded and are expected to achieve a minimum standard to graduate, ASBC has not set such a requirement
- TBS curriculum is primarily hands-on with several field exercises, while ASBC uses more discussion and academic lectures

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It appears that the course did address the cognitive aims posed by CORONA. ASBC taught Air Force history, it instructed on the Air Force core competencies, and it provided greater depth of doctrinal and operational knowledge. However, the case cannot be made for the development of affective outcomes. Simply stated, the ASBC curriculum did not have enough time and the curriculum developers were too constrained to focus on affective outcomes. It appeared that the staff was aware of the need to enhance affective learning at the course, but they felt that it could not be accurately accomplished in the time provided: essentially, the train had left the station and could not be turned around. Instead, they defaulted to hoping that the cognitive outcomes would spur the affective to follow. This was a gamble that did not appear to pay off as evidenced by the results in Chapter 5.

Figure 3.9 Evolution of ASBC and Comparison to the AF/LRP Vision and the TBS Program

Category	USMC TBS	AF/LRP August 1996	Air University Option Spring 1997	ASBC Test Course Summer 1998
Curriculum	Broken into 3 areas: Academic Leadership Military Skills	Emphasis of various areas: expectations for both cognitive and affective change	Emphasis of various areas: emphasis primarily upon cognitive aspects	Emphasis of various areas: emphasis almost solely upon cognitive aspects
Physical fitness	Yes.	Martial arts, morning calisthenics, long runs with teammates	Physical fitness concepts like running and calisthenics	Ultimate Frisbee
Duration	21 weeks	16 weeks	6-7 weeks	7 weeks
Grading	Yes. • Grade of 70% on each graded event is required to pass. • Average grade of 75% for each curriculum section is required to pass • Average grade of 75% overall is required to pass	Individual grades based upon individual knowledge, peer evaluations, and team grade (at least 50% of total); failure to meet a minimum standard would mean the student will be required to retake the program	No discussion of grading or necessity for providing any class rank	Tests were graded, but scores not used for ranking
Attendance	All officers attend prior to technical training or first assignment	Prior to first assignment	Prior to first assignment	Prior to first assignment
Final exercise	Various capstone exercises used at the end of training blocks to develop skills for integrating previously learned concepts	Multi-disciplined exercise required; no specific duration listed	Discussion of a capstone course, but specifics not identified	Blue Thunder (4 days)
Requirement for operational jobs after attendance	No. Although, the focus of the training is to provide combat skills to all officers, regardless of specialty.	Yes--all ASBC graduates would follow-on to one of three assignments: aircrew, space operations, or information operations	No discussion of placement of students after graduation	Not a requirement

Chapter

4

Assessment and Experiment Design: Determining the Effectiveness of the ASBC

"I expect you to understand the meaning of being an airman. I expect you to be an airpower advocate. I expect you to learn, to internalize, to live the core values of our United States Air Force.

"You are now the newest members of the only Air Force in the world that can project aerospace power as no one else can. We owe it to our team and to our nation to fully understand this tool. This is really the dawn of a new era for our United States Air Force. I know this course will serve you well as you go forth and serve."[107]

As General Newton indicated in his address to the first class of ASBC participants on the Course's opening day, there were significant expectations placed upon ASBC in its ability to change the organization. My participation in the development of the course was to construct a research methodology and conduct an analysis that would answer CORONA's question of how effective the course is at fulfilling the expectations. This chapter summarizes that work. Specifically, I describe my role in the organization and the unique contributions that I made to developing an analytical approach to address the CORONA tasking. Accordingly, this chapter is organized around the following topics: the host of activities that occurred at ASBC and my involvement in the major events; a discussion of how I translated the CORONA tasking into five specific research questions; a description of the experimental design that I chose to implement; my role in the development of the cognitive test; and how I created the affective survey. Chapter 5 will describe the results from applying this methodology and show how the course addressed some of CORONA's expectations but did not fulfill others.

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[107] General Lloyd "Fig" Newton in his address to the students of the Air and Space Basic Course on July 24, 1998.

My Role at ASBC in Developing an Evaluation Approach

Given ASBC's limited resources and number of active duty military personnel, ASBC management looked outside of the organization in search of Air Force Reserve officers for specific expertise to augment the staff. In general, there were three skills that were sought after: curriculum development, wargaming experience, and analytical expertise. I fit into the last category and was hired by the ASBC Commandant to serve as the deputy director for evaluations to augment the evaluations division. In this capacity, I was one of three people solely assigned to the evaluation area. Whereas the other two people were responsible for data collection, database creation, and development of the ASBC cognitive test, my charge at ASBC was twofold: 1) to develop a broader evaluation framework that could answer the question posed by in CORONA in Fall 1996: "What are the results of the ASBC?" and 2) to create a method for measuring attitudinal changes in the lieutenants who attended the course. Although the question posited by CORONA appears to be very simple at face value, further exploration of the question yielded several approaches and activities that were required to fully answer it. I was responsible for creating this approach and coordinating my ideas with upper management of the organization to ensure proper execution. For the purpose of demonstrating the unique contributions that I made to the organization and which simultaneously formed the core of the analytical work presented in this dissertation, I have constructed a chart that includes major milestone activities associated with answering the CORONA question.

This list is presented as Figure 4.1 and also serves as an outline for the remainder of this chapter as I discuss specific activities, my involvement, and their duration as indicated by the timeline. For purposes of delineating my responsibilities and contribution to the organization, I have specifically highlighted two columns: 1) those activities which I was primarily responsible for developing and executing and 2) other activities that I played a significant role in terms of participating (e.g. discussion and/or research support). In each of these columns, I have added an "XX" to designate where I either led or participated in the effort.

Figure 4.1 Overview of Analysis Activities and My Participation and Primary Contributions

	1996	1997				1998					
	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Participation	Primary Contribution
Milestone Event											
Original CORONA Tasking	■										
Air University Surveys	■	■									
ASBC Organization Formed			■								
ASBC Curriculum Development				■							
ASBC Conducted								■		XX	
Evaluation Activities											
Research Design and Evaluation Methodology											
Development of 5 key questions					■	■				XX	XX
Research of different designs						■				XX	XX
Sample size Consideration							■			XX	XX
Demographic Variable Selection							■			XX	XX
Consideration of real-world constraints							■			XX	XX
Finalized Experimental Design							■			XX	XX
Design of Logistical Considerations							■			XX	XX
Web and Database Development								■		XX	
Cognitive Test Development											
Literature Search					■	■				XX	
Test Item Review Committee						■				XX	
Finalization of Cognitive Test							■			XX	
Coordination of Test with AFPC								■		XX	XX
Validity and Reliability Analysis									■	XX	
Affective Survey Development											
Literature Search of Existing Methodologies						■				XX	XX
Status Briefings with Organizational Mgmt						■	■			XX	XX
Coordination with Military Organizations						■				XX	XX
Development of Affective Survey						■	■			XX	XX
Validation of Survey by Focus Groups							■			XX	XX
Finalization of Affective Survey							■			XX	XX
Coordination of Survey with AFPC								■		XX	XX
Reliability Analysis of Survey									■	XX	
Quantitative Analysis											
Development of Analytical Approach						■				XX	XX
Collection of Data									■		
Analysis of Cognitive Data									■	XX	XX
Analysis of Affective Data									■	XX	XX
CORONA Briefing Development											
Construction of CORONA White Paper									■	XX	XX
Construction of Finalized CORONA Briefing									■	XX	XX

Research Design and Evaluation Methodology

The ASBC, like other Air Force programs, competes for resources (money, facilities, time, and people). Likewise, it is affected by policymakers' decisions in ways that constrain the amount of money that can be spent, the number of people who can work in the organization, and the time in which the effort must be completed. Although these constraints temper the analytic robustness of this research, they also added a dimension of reality that emphasized the importance of the task at hand. This is not to say that research utility was not maximized as much as possible—where noted, explanations are given for areas of the design which may not be as 'optimal' as they otherwise would like to be (randomization of the sample, sterility of the testing environment, etc.).[108] In these cases, I have made recommendations where future iterations and study of the problem could be enhanced. In consideration of this general caveat, this section will highlight the five questions (and associated hypothesis) that I developed to answer the CORONA tasking, an explanation of the experiment design and why it was chosen, the sampling methodology that was used, and the data elements that were captured to facilitate the analysis.

Five Key Questions

The CORONA that tasked development of the ASBC also hypothesized that the ASBC course of instruction would create positive change in the new officers by instilling knowledge and motivation into the participants. Knowledge in this case refers to 'cognitive' information such as history and Air Force core competencies that can be comprehended by participants; 'motivation' refers to affective attributes (emotions and feelings) about the Air Force and service as an officer. In support of this overarching vision, my evaluation methodology was focused upon answering the following five key questions that addressed the CORONA tasking. This 5-question framework also forms the structure for the quantitative analysis that is presented in Chapter 5.

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[108] Two specific categories of constraints that are known in this design are: the limited resources (time, money, people) and the minimization of down-time of second lieutenants who will be selected to attend ASBC. The latter point refers to the time which lieutenants will spend out of either their regular, occupational environment.

1. Are there pre-test differences among commissioning sources prior to attending ASBC?

Of all of the potential variance that could be expected within a cohort of new lieutenants, the characteristic with perhaps the greatest impact is the demographic variable associated with the individuals' commissioning source.[109] Because of this importance, the evaluation methodology focused specifically upon determining if participants had different levels of knowledge and/or different attitudes when entering ASBC. Not only do I wish to see if commissioning source experience makes a difference in knowledge and motivation prior to entering ASBC; but also this question lays a foundation for measuring change at the end of the course. Both affective and cognitive knowledge were assessed in answering this question.

2. Are there post-test differences among commissioning sources at the conclusion of the course?

An explicit goal of the ASBC test course per CORONA guidance was to provide a common, shared experience for officers, regardless of commissioning source. To measure such an outcome, the evaluation methodology included analysis to determine whether or not there were differences among the commissioning sources at the end of the course. Both affective and cognitive knowledge were assessed in answering this question.

3. Is there a difference in the post-test scores as a result of participating in the Blue Thunder Exercise?

As highlighted in the curriculum discussion in Chapter 3, the *Blue Thunder* exercise provided a capstone for the entire ASBC curriculum. The main purpose for the exercise was to allow participants to apply theoretical knowledge (learned from classroom and seminar activities)

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[109] As opposed to variance that may be attributed to gender, race, academic major or AFSC classification, for example.

in an operational environment. Given potential future changes in the design of the curriculum, some hypothesized that the exercise did not add to participant's cognitive knowledge activities. This question was assessed to determine if there were changes in cognitive scores based upon the *Blue Thunder* experience.

4. Does the ASBC have an impact upon participants?

To answer this question, a pre- and post-test was given to students and results were compared to determine whether: 1) participants knew more by attending the course and 2) if participants had any significant attitudinal changes by attending.

5. Does attending ASBC provide more knowledge and/or change attitudes than not attending the course?

To quantitatively assess the ASBC's overall impact, it was necessary to test a control group to measure any changes (cognitive and/or affective) during the seven week course. The control group refers to a group of participants who took pre- and post-test surveys, but did not actually attend ASBC. This is in contrast to the treatment group of students that actually attended the course. Results between the control and treatment were compared to determine if differences existed for two main reasons: 1) to determine if the treatment group was indicative of the greater population (by use of pre-test comparisons) and 2) to determine if the treatment group had greater gains and/or changes from attending ASBC as opposed to not attending. Hypothesis statements were formulated that addressed the above research questions. Figure 4.2 summarizes the research questions and my initial expectations for the potential outcome of each.

Figure 4.2 Hypothesis Statements for Each of the Research Questions

Question	Expected Outcome (Hypothesis)
1. Are there pre-test differences among the commissioning sources?	Expected that the commissioning sources would have different cognitive and affective scores because each commissioning program provides a different set of skills and experience.
2. Are there post-test differences among the commissioning sources?	Expected that ASBC would provide information such that there would be negligible difference between affective and cognitive material; essentially, ASBC would baseline participants' knowledge to a similar level.
3. Are the post-test scores of students who were tested at the conclusion of *Blue Thunder* different from those who took it before the exercise?	Expected that there would be a difference in outcomes—specifically, the *Blue Thunder* exercise was intended to reinforce theoretical material learned during the first part of the course.
4. Does ASBC have an impact on participants?	Expected that ASBC would have statistically significant impact both cognitively and affectively, in a positive manner. Specifically, expected that cognitive scores would be higher and that affective evaluations from the students would be more optimistically scored.
5. Does attending ASBC provide more knowledge than not attending the course?	Expected that ASBC would provide more knowledge and change attitudes in a more positive manner than would not attending the course.

Experimental Design

The experiment design that was used by ASBC was focused primarily on two dimensions: time and experience. Specifically, the experiment design needed to account for how to quantify 'valued added' by attending the course. Examples of the types of questions that were asked in accordance with this thought process included: How does one know if a participant learned and/or changed by attending the course? Secondly, it was hoped that the experiment design would account for a time effect of being at ASBC: specifically, if one did not attend ASBC, could one learn as much (change as much) by being in the USAF (and not attending ASBC) during a similar 7 week period. Essentially, these two thoughts stimulated two measurement techniques: the use of a pre-test/post-test design to account for the experiential

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effect and secondly, the use of a control group from which treatment group results could be compared. Figure 4.3 shows how the design was initially envisioned:

Figure 4.3 Proposed Experiment Design
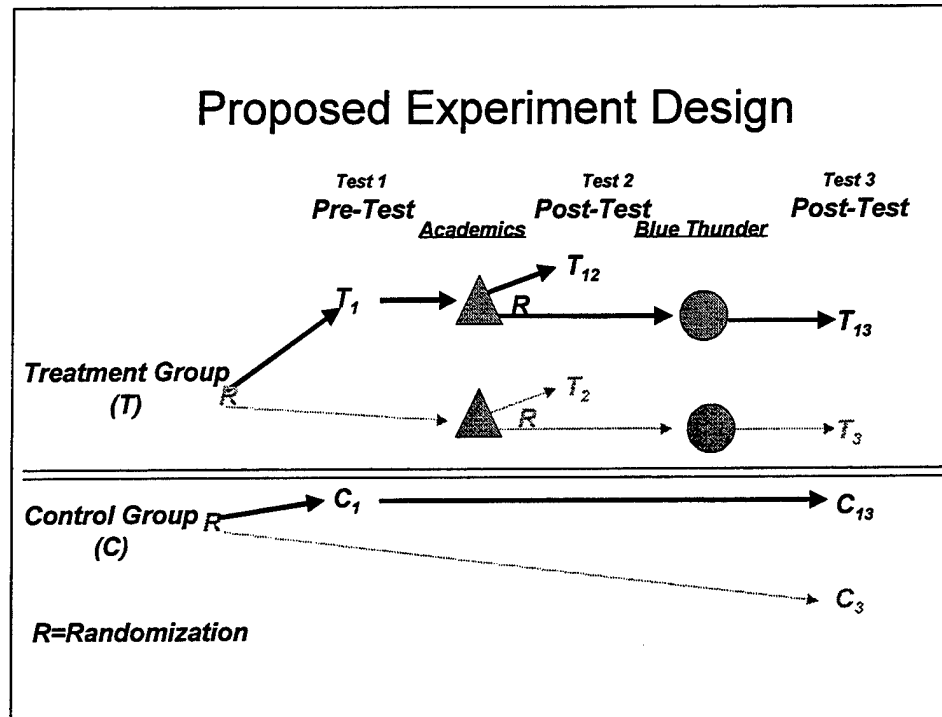
As previously indicated, the strength of this design is that two groups, a treatment group (T) that attended the ASBC and a control group (C), that did not, were the main focus of the set-up. Each group was selected by the use of a randomized process and would be given both pre and post-tests (cognitive and affective). Another unique aspect of this design is that an internal break-out by *Blue Thunder* experience was also conducted. The purpose of this breakout was to determine whether or not *Blue Thunder* produced any additional cognitive gains. To facilitate this analysis, some of the treatment group (T12) was given their post-test before *Blue Thunder* began, and the other half of the treatment group (T13) was given their post-test at the end of the exercise. Finally, this experiment design also controlled for the potential effect of an individual taking the ASBC pre-test and 'learning' from it--specifically, learning in this context refers to doing better on the post-test because of the pre-test experience. This effect was controlled for in the

above experimental design by testing some groups before and after (T12, T13, and C13) while others were just given the post-test (T2, T3, and C3).

In reality, the experiment design shown in Figure 4.3 was slightly modified due to the constraints previously mentioned in the earlier part of this section of the report. Specifically, ASBC did not have the manpower resources or the time to administer an experiment that controlled for the test learning bias. The actual design that was eventually implemented is highlighted by the bold arrows in Figure 4.3. It collected test data on groups T1, T12, T13, C1, and C13.

In conjunction with Figure 4.3, Figure 4.4 shows a graphical representation of the hypothesized results of the experiment. Like Figure 4.3, bold lines in Figure 4.4 indicate that the points that were actually tested. Expected outcomes were that: the post-test scores would be higher than pre-test scores; the Blue-Thunder experience would be beneficial relative to taking the post-test (i.e. it would cause higher test scores); and that the treatment group would have higher scores than the control group because of their attendance at ASBC. Results presented in Chapter 5 will show that some of these hypotheses were validated while others were not.

Figure 4.4 Anticipated Results of the ASBC Test Experiment

Anticipated results of the experiment

Score

T_{13}

T_3

Treatment Group
(T)

T_{12}

T_2

C_{13}

C_3

Control Group
(C)

$T_{1 \& } C_1$

Academics   Blue
             Thunder

Time

Pre-Test   Post-Test   Post-Test
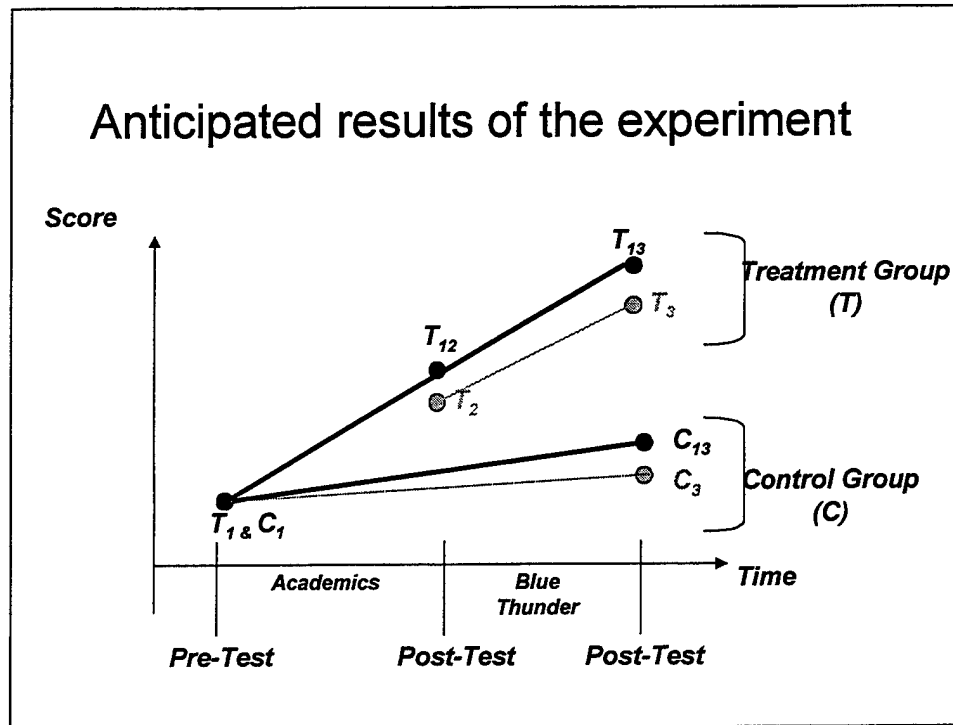
Sampling

As indicated in Figure 4.3, the ASBC experimental design required that a statistical

sampling method be utilized in order to ensure that a representative group of individuals (relative

to the population) had been selected to attend. The main statistical purpose for using a random

selection process is to minimize potential bias among the sample of participants that attended the

course. For example, if the Air Force sampled from among just the ROTC graduates, the results

of the course would probably be biased and one could not generalize findings to the population of

newly commissioned lieutenants. An important facet underlying the statistical validity of testing

and measuring the ASBC participants and the control group is that all subjects should be

randomly drawn from among the population of lieutenants. Coordination with the Air Force

Personnel Center (AFPC) and the Air Force Academy were key to attempting to achieve a

randomized process.

A caveat (and constraint) to this randomization technique was that both control group and ASBC participants were expected to be drawn in relative percentages as they are currently represented by commissioning-source accessions. This directive had been communicated to AFPC prior to my arrival at ASBC and AFPC personnel had already decided upon both the number and the relative ratios of commissioning sources that would attend. Given the nature of a real-world policy problem like this one, I had no leverage over changing the process for selection of who would attend and who would not. The purpose of this requirement was to ensure that the attendees at the course were not from one commissioning source or another in order to reduce variance—essentially, by placing this constraint on the selection process, the selection of lieutenants was done in a stratified manner (in this case, stratified by commissioning source). For example, in FY1997, approximately 50% of all new lieutenants were commissioned through the Air Force Reserve Officer Training Corps (ROTC), 30% were commissioned through Officer Training School (OTS), and 20% from the Air Force Academy. ASBC participants and control group subjects were expected to be selected in the same relative percentages. Figure 4.5 shows a graphic that describes the optimal sampling method:

Figure 4.5 Optimal Sampling Method for ASBC Test Course Participants
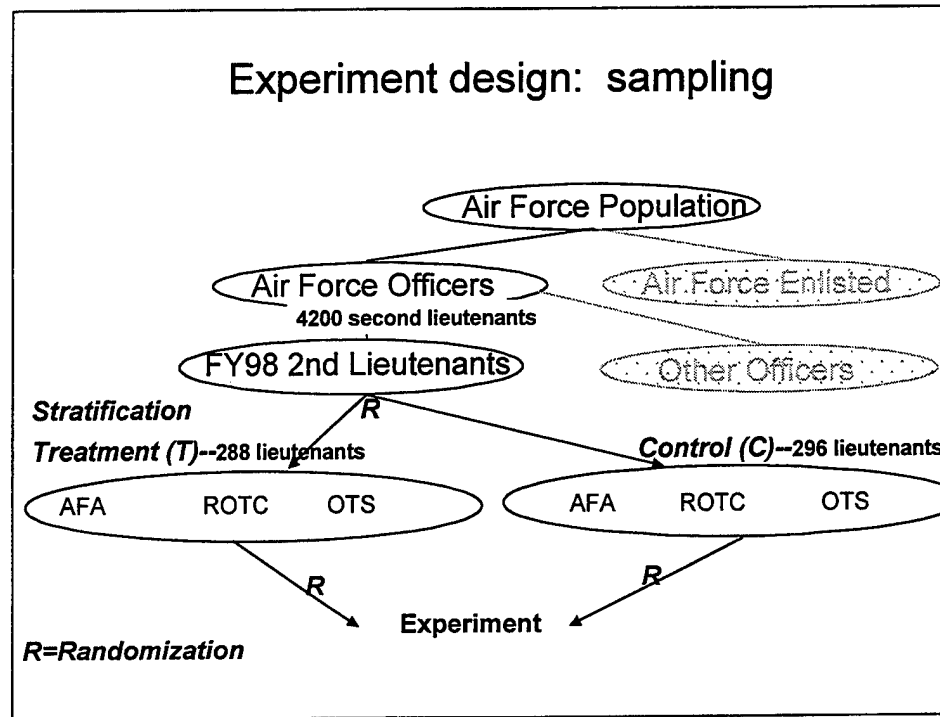
In reality, the selection of lieutenants was not completed as randomly as was hoped for: Academy attendees were not randomly selected (they volunteered to attend) and the commissioning source mix of officers deviated from the overall population characteristics (results are shown in Chapter 5). These aberrations were primarily due to personnel and resources constraints that could not be alleviated by either the Air Force Academy or the Air Force Personnel Center (AFPC). Impacts from these non-random processes and limited mix will be discussed in the implications section of this report.

A sample of 584 from a total population of 4,200 lieutenants was selected for this research. A total of 288 students were assigned to the treatment group and an additional 296 students were identified as the control group. Sample size selection was influenced by resource constraints that the Air Force placed upon ASBC. Initial expectations for the ASBC test course were for a total of 1,000 lieutenants to attend; policy decisions made during Spring 1998 changed this number to the size presented above. 23 civilians were also selected to attend the ASBC;

however, they were not included in this analysis. The decision to include civilians in the ASBC was based upon guidance from the CORONA 1996 directive.

The control group that was selected based on voluntary participation from those officers not selected to attend the ASBC in residence. A total of 2,300 surveys were distributed to those individuals not attending the ASBC in residence identifying them as a part of the control group. Instructions were given to them outlining the part they would play in the overall evaluation of the course (See appendices C and D for copies of the instructional letters that were sent to the control group participants). There were 296 responses to the survey for a return rate of 12.87%. The respondents were asked to evaluate the course by completing a three-part survey conducted via the Internet: demographic information that was collected on all of the participants; a cognitive test composed of the same 100 questions used in the pre-test and post-test of the resident students; and an affective survey composed of 78 questions covering integrity, core values, understanding of Air Force doctrine, etc. The demographic representation of the control group tended to represent the treatment group and the Air Force population as well.

Of those 296 responses from the control group on the pretest, only 40 personnel chose to complete the post-test survey. This had a tremendous impact on ASBC's ability to follow the original research design model of having pretest and post-test data on both the treatment and control groups. Of those 40 valid returns for the post-test data, however, there were minimal changes from pre-test to post-test data. Results are presented in Chapter 5.

Data Collection Methods

Several types of data were collected during the course of events at ASBC. Data was categorized into four groups: personal demographic information, cognitive test data, affective survey data, and course feedback data. The type of demographic variables that were collected was based upon my expectations with respect to the questions that I anticipated that CORONA may ask--albeit, no specific guidance was given with respect to which demographic variables were more or less important to one another. For example, I expected that CORONA was highly interested in understanding differences between commissioning sources, gender, and race. In

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these cases, I made sure that we asked for the information. I also expected (although less certain) that CORONA may want to understand how AFSC, prior service experience, or academic degree influenced scores or attitudes. The bottom line is that I was able to collect a significant amount of demographic information on the participants just in case CORONA desired to see the analysis presented in a myriad of ways. Where possible, personal demographic information was collected directly from the participants. In cases where an individual did not provide all of the demographic information on the coded sheet that I created, I used AFPC data on the individuals to fill-in any gaps. The following figure summarizes the demographic variables that were collected from both the treatment and the control groups. See Appendix I for a more detailed list of the demographic questions that were asked of the respondents.

Figure 4.6 Demographic Variables Collected

Rank	Gender
Age	Martial status
AFSC	Race
Commissioning Source	Highest academic degree attained
Prior service	Military component
Parents in the military	Religious preference
ROTC scholarship status	ROTC detachment
Undergraduate GPA	Motivation to attend ASBC

Affective survey data, cognitive test data, and end of course survey data were all collected from participants via the use of computers and the internet. Although I designed the demographic questionnaire and was responsible for determining which demographic variables were selected, I did not participate in the collection of data or the storage of information in the ASBC database. Instead, all data was stored in databases that had been created by a colleague within the Evaluations Division. The information was only accessible by Evaluations personnel for purposes of review and analysis.

Cognitive Test Development

One major portion of the evaluation was focused on the use of a cognitive test to determine the amount of technical information that students learned from participating in the course. The cognitive test was formulated during a six-month process and involved myself, other evaluation division staff, and curriculum development staff and management. Together, we constructed a comprehensive, 100-question, multiple choice test that addressed all areas of the curriculum (discussed in Chapter 3). Appendix E contains the actual cognitive test that was used for evaluation. Where possible, questions were selected for inclusion in the test based upon their relevance and importance relative to other course material. This section describes the methodology for how the cognitive test was developed and administered to the students.

Test-Item Development Procedures

For each specific learning outcome, a panel of subject-matter experts from the ASBC Curriculum Directorate submitted a series of test items, normally multiple-choice type items, to the Evaluations Division for review. These items were designed to measure the students' ability to apply specific concepts and principles taught during the foundational lessons to specific simulated scenarios. The developmental comprehension-level lessons and the application-level case studies included in these lessons taught the foundational concepts and principles and thus facilitated the students' ability to apply properly these developmental principles in new situations. This concept demonstrates, by definition, achievement of the overall lesson objective.

Test-item construction followed Gronlund's checklist for evaluating informal achievement tests.[110] Each test item included the rationale for the correct and incorrect responses. All scenarios and test items were reviewed by the Test Item Review Committee (TIRC), which was comprised of the same senior faculty who reviewed the lesson plans described above. I also participated in TIRC discussions and question selection as one of approximately eight people

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[110] Gronlund, pp.152-4, 1988.

who worked on development of the cognitive test. Together, we (TIRC) reviewed, revised, and approved/disapproved all proposed master test bank items, tests, and performance appraisal instruments. In order to accomplish these tasks, each committee member evaluated proposed test items using rules for effective test item construction.[111] The TIRC met as a group and formally reviewed each exercise scenario and subsequent test item with the panel of experts or its designated representative for the purpose of determining item-objective congruence. Three standards were used to affirm or deny the match between the item and the objective: 1) behavior, 2) content, and 3) hierarchical classification based upon Berk's criteria.[112] In accordance with these standards, the TIRC affirmed that: 1) each item required the behavior stated in the instruction outcome, 2) the content identified by the instruction outcome was significant, and 3) the required behavior met the hierarchical classification (based upon Bloom's cognitive taxonomy). Prior to inclusion as an official item on the cognitive test, three-quarters approval vote of the TIRC member was required.[113] As part of the analytical framework, I assisted with the determination of test-item validity, instrumentation, and reliability—all necessary components of a good test instrument. Appendix H contains a discussion of this information and results from the analysis that was conducted by the team.

Standardization of Instruction and Testing

To ensure that each student was exposed to essentially the same instruction, each faculty member was expected to follow a highly structured academic instructor guide (lesson plan) during all seminar sessions and was evaluated periodically by a senior faculty member to ensure standardization of instruction and faculty appraisal. Subject areas that required introductory or foundational knowledge, not satisfied by outside required readings, were presented in large group lectures before students dealt with the content in a seminar setting. In addition to large group lectures, instructional methodologies included guided discussions, small-

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[111] Gronlund, 1988.
[112] Berk, 1980, p. 51.
[113] Bloom, et al., 1971.

group problem solving, and case studies. In-service training was conducted on a regularly scheduled basis for all faculty members.

As previously highlighted, the testing program at the ASBC consisted of a pre-test/post-test design intended to measure the achievement of educational objectives at the knowledge and comprehension levels of the cognitive domain.[114] The purpose of the testing program was to measure student mastery of educational objectives, the comprehension of principles taught, provide feedback to the faculty on the effectiveness of their instructional efforts, provide feedback to the students regarding their mastery of the lesson material and its principles, and provide data for curriculum decisions. Items reflecting an ease index of 40% and a discrimination index of .20, which would be acceptable in a norm-referenced program, warrant adjustment in the instructional area and/or test items in this domain- or objectives-referenced program. Further, the testing program was not designed to predict graduates' success in future assignments. Rather, the purpose of the testing program was to demonstrate to ASBC and Air Force management whether or not students had achieved what was taught to them.

Affective Survey Development

We now turn our focus on the evaluation methodology developed for assessing attitudinal changes associated with attendance at the course. As indicated in Figure 4.1, relative to my role as one team member on the TIRC in development of the cognitive test, I was held responsible for the development of the affective survey instrument. By its very nature, an affective assessment tool is not as 'clean' of an assessment tool as is the cognitive assessment. Whereas the cognitive assessment methodology mentioned above was based strictly upon assessing the student's comprehension of the course material, the affective survey attempted to capture their attitudes (in some cases, preference) for specific types of outcomes and/or scenarios.

In attitudinal (affective) categories, there are varying degrees to which an individual can demonstrate learning. In the case of cognitive learning, Bloom's taxonomy[115] has been

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[114] Bloom, 1980.
[115] Bloom's Taxonomy of cognitive learning

recognized and utilized as a template for defining the various levels of cognitive learning. In regards to affective learning, Krathwohl's[116] taxonomy has been used by educational developers to assess the degree to which individual's harbor specific types of beliefs. In both cognitive and affective learning, it is generally a goal of the curriculum developer to specify a level (degree) upon which educational outcomes are focused. For example, Bloom's taxonomy incorporates six different (and successive) levels of learning that exist in the cognitive domain; it is the curriculum developer's task to choose which of the six levels to focus the course on. A similar task can be completed for the affective domain (Krathwohl's taxonomy). Aside from choosing a level of depth that the course attempts to get across to the participants, curriculum designers must also design methods for assessing whether or not students achieve expected levels of competency and understanding. Some of the more common testing methods include oral testing, written examination, and demonstrating proficiency through physical activity. These methods (and others) are used to determine the student's competency relative to established standards

Framework Development

In designing a framework for the affective evaluation, I began with a broad approach to the problem that included a literature review of 1) the genesis of the ASBC idea (presented in Chapters 1 and 2) and 2) the technical aspects of developing affective evaluations. Examples of the literature studied to understand the ASBC concept included: the AF/LRP July 1996 *White Paper*, Carol Builder's *Icarus Syndrome* (1994), interviews with senior policymakers including AU/CC, the *AF Times*, information presented at CORONA meetings from 1996-1998, documentation at Air University, and other historical information. The following citations were critical to an understanding of the affective domain: *Taxonomy of Education Objectives: the Affective Domain* (1964) by Krathwohl, et al., USAF Manual 36-2236, the USAF Core Values, examples of other USAF affective evaluations, and discussions with personnel at the Air Force Academy, the Navy Core Values Office, the Air Force Personnel Center, and Brooks AFB.

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[116] Krathwohl's taxonomy of affective learning

Distillation of Seven Key Factors

From these reviews, a list of seven key factors was distilled. The key factors represented an aggregation of key concepts that were policymakers' expectations for what the ASBC was supposed to accomplish. The literature that was read and used to distill the list of factors included historical analyses of Air Force culture, policy statements by senior personnel, Air University documentation, interviews with key staff members, and the explicit direction received from the Fall 1996 CORONA conference. Several of these documents have already been discussed and are located in the bibliography of this work. Likewise, a common thread that was observed throughout the factors developed was that they were relevant to what the SAF, CSAF, and senior policymakers desired for the ASBC to address in the affective area. These seven factors included:

- the three USAF core values (integrity first, service before self, excellence in all we do),
- commitment to teamwork,
- group affinity and socialization among officers,
- job satisfaction, and
- technical knowledge.

From this list of key factors, more specific affective objectives were created that captured the intent of the factor. These objectives were then used to create statements that could be assessed (agreement or disagreement) by course participants. A list of the statements that were eventually used can be found in Appendix F of this document.

Affective Questionnaire Development

To ensure a robust evaluation tool, I used both Air Force policy and Air Force organizations for support in validating the affective survey that was used. Specific technical resources that were utilized to construct the affective evaluation tool included: Krathwohl's taxonomy of affective learning, other examples of successful affective surveys that have been used within the Air Force, technical support from the Air University, Air War College, Air Force

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Academy, the AFPC, and Air Force Manual 36-2236 that details processes for capturing

attitudinal information. Some of the attitudinal and affective surveys that were studied included

the following: the Air Mobility Team Survey, the Navy Core Values Survey, the Air Force

Academy Cadet Cultural Survey, the Organizational Beliefs Questionnaire: Pillars of Excellence,

Value-System Instrument, the Values Preference Indicator (VPI), and the Military Environment

Inventory.[117] Each of these surveys examined affective attributes slightly differently and didn't

correspond to a 'perfect' match with respect to the goals of the ASBC assessment. Instead of

using any of the sources directly, I referenced them to create an organic survey that was tailored

to the needs of ASBC with respect to the seven factors previously mentioned.

Use of a Likert Scale to Measure Preference

To facilitate measurement of the attributes listed above (and the evaluation tool located in

the appendix), a 6 point Likert scale with an 'omit' option was used. Much research in the area of

survey design has been accomplished on the appropriate use of scaled responses for surveys

like the one used for ASBC. A Likert Scale with a continuum of responses from Strongly Disagree

to Strongly Agree was chosen as the appropriate tool to measure student expectations. The

following shows the response continuum that was utilized for the affective instrument. An implicit

assumption that was made in terms of using the Likert scale was that the spectrum of answers

corresponded to a linear response scale. For example, a strongly disagree was coded as a "1" in

the dataset, a Disagree was coded as a "2", up to the point that a Strongly Agree was coded as a

"6." This distinction is an important one due to the fact that analysis techniques, like One-Way

ANOVA, consider the responses (values) to be a scalar, i.e., they represent a value along the

spectrum. Students were not encouraged to choose response "G" unless they were not aware of

how to respond—essentially the goal of this instrument was to avoid any 'fence-sitting' that may

occur with a middle response such as 'neither disagree or agree.' Participants were given written

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[117] See the Bibliography section of this dissertation for more detailed references of works and surveys reviewed.

instructions on how to complete the survey and were asked to do so within a specified time limit of 90 minutes. Figure 4.7 shows an example of the scale that was used.

Figure 4.7 Likert Scale Used in the Affective Survey

A	B	C	D	E	F	G
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	Don't know or not applicable

Validation of the Affective Survey Instrument

There were three specific types of reviews that I undertook to ensure that the logic and content of the instrument were coherent. First, the survey was reviewed by senior personnel at both ASBC and within the Air University. Secondly, I conducted a series of three focus groups with officer candidates at the Officer Training School and lieutenants at the ASBC, to determine whether or not the survey instrument was well-understood. For each one of these focus groups (total n= 64), participants were asked to fill out the survey in its entirety and to determine whether: the instrument statements were clearly stated, different interpretations could be derived from the statements, and whether or not one could easily "firewall" a response to a statement. Each focus group provided detailed feedback, which was eventually incorporated into the instrument. The final method involved providing the survey to outside organizations within the Air Force to gain feedback as a quality check. Aside from sending the survey to the Air Force Human Research Laboratory for review, I also sent the instrument to the Air Force Personnel Center for approval. AFPC reviewed the survey and assessed its validity as a measurement tool.

Because the test course evaluation methodology required that a control group be utilized for the sake of comparison with the treatment group, I was required to coordinate all affective survey activities with the Air Force Personnel Center located at Randolph AFB, TX. In May 1998, I completed a coordinated package that included the affective survey, experiment methodology, and the intent for how the results would be used. This material was forwarded to AFPC for their

approval. AFPC approved the use of the affective survey in May 1998 and a survey control number (SCN) 98-39 (expiration date December 31, 1998) was assigned for the affective evaluation.

Limitations With This Methodology

There were five areas specifically highlighted throughout this chapter that could be considered to be limitations with the methodology used. Because of the inherent constraints associated with the experiment, it is recommended that these areas serve as focal points for future research and enhancement by ASBC as it continues to improve the course.

Random Selection

Future studies should include a randomized selection process for all participants. The limitation with the current research is that there is a potential for bias given that Academy graduates were able to volunteer to attend, while ROTC and OTS graduates were not. This point is further addressed in Chapter 5 and does not appear to have greatly influenced the overall results; however, this is necessary for consideration in future designs.

Limited Scope of Study

This study was limited in scope in that it focused on a narrowly defined military officer sample. This sample was drawn from a population defined as newly commissioned Air Force officers selected at random from those officers who had been commissioned during FY 1998. Therefore, this sample was representative of the population of newly commissioned Air Force officers (1998 population), but was not representative of the total Air Force officer population. Results from this study cannot be generalized to the greater population. Further research may consider expanding the scope of this effort to examine the impact of a course like ASBC upon civilian participants, enlisted servicemembers, or even more senior officers.

Standardization of the Testing Environment

Although control and treatment group participants were both given the same cognitive test and affective survey, there were starkly different testing environments that existed for each. For the most part, ASBC personnel were able to control the testing environment at Maxwell AFB when the treatment group was administered the exam and survey: essentially, there were strict time standards and individuals were monitored. ASBC did not have such influence over the control group participants who took the survey and exam by use of the internet. There were three potential problems with this lack of control: 1) there was no monitoring of time; 2) there was the possibility for collusion among control group participants at the same location; and 3) the internet testing method was different than what the treatment group used. The impact of these issues could lead to differences in scores on the cognitive test or even differences in the answers to the affective questions; albeit, I hypothesize that such differences were minimal. Further studies should consider a more standardized testing environment for both groups.

Controlling for Pre-Test Experience

As previously indicated, the original experiment design controlled for any learning that may have occurred on the pre-test. This design was later changed because of the resource constraints at ASBC and the hypothesis that there was probably minimal learning that occurred from taking the pre-test. A recommendation for future studies is to consider controlling for pre-test learning to determine how much of an effect (if any) results from taking the test.

Cognitive Test and Affective Survey Validation

The final limitation of this design was that there could have been more rigor in the validation of both the cognitive test and the affective survey. Although there were significant attempts made at validating the instruments, it is clear that one session of the ASBC is not enough. Future studies should consider collecting more data from the ASBC, examining the test scores and affective survey responses, and refining the instruments.

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With this description of the experiment design, the methodology employed to collect information, and the limitations associated with this experiment, the next chapter highlights the results from the analysis that was conducted on the cognitive test and affective survey data.

Chapter

5

Data Analysis, Results, and Policy Implications Related to Improving the ASBC

The purpose of this chapter is to provide data results that address the five primary

research questions discussed in Chapter 4. These quantitative results form the concrete basis

for determining whether or not the ASBC met its original mandate to serve as a catalyst for

creating change within the Air Force. In review, these five questions are:

- Are there pre-test differences among the commissioning sources?

- Are there post-test differences among the commissioning sources?

- Is there a difference in post-test scores of students who were tested at the conclusion of Blue Thunder relative to those who took it before the exercise?

- Does ASBC have an impact on participants?

- Does attending ASBC provide more knowledge than not attending the course?

The chapter is organized around three specific analyses and is followed by a list of policy

recommendations to enhance the ASBC. The first section of the data analysis explores the

generalizability of results to the full population of Air Force lieutenants. I examined demographic

data of the control and treatment groups and concluded that, for the major variables considered in

the analysis, they match the overall demographics of the population of lieutenants well.

The second major section of this chapter is focused upon answering the five key questions

presented above and demonstrates that the ASBC accomplished part of its goal: cognitive

scores increased by attending ASBC. This is in comparison to the outcome that affective scores

did not. This is an important finding that has significant implications for why the course should be

redesigned to meet its affective mandate. The final part of the data analysis highlights

participants' critique of the course; it shows that many of the participants thought that the

experience was worthwhile. I conclude the chapter by discussing four policy recommendations that will improve the ASBC for future classes. For each recommendation, I have included the issues that it directly addresses, what type of resources would be required to implement the recommendation, and a prescribed timeline for implementation. For the most part, all recommendations can be implemented within reasonable timeframes and resource constraints.

Generalizability of Results and the Use of Stratified Sampling

One important aspect of an analysis of this type is to determine whether or not the results of this experiment can be generalized to the wider population of lieutenants for the 1998 commissioning cohort, as a whole. To facilitate generalizability, it is important that two things occur in the research design: 1) that the participants in the experiment (both treatment and control) be representative of the overarching population with respect to certain characteristics; and 2) that the treatment and control group participants be equivalent with respect to cognitive understanding and affective attitudes prior to exposure to the treatment. This second condition will be explored further in the data analysis sections of this chapter. In these sections, I use quantitative results to show how well the treatment and control groups compare to one another.

The Use of Stratified Sampling

Typically, a random selection process is the desired method of selection of test subjects because it enhances the statistical viability of the results by ensuring a representative cross-section of the population that is being studied. As presented in Chapter 4, the test subjects in this experiment (both treatment and control) were chosen by use of a stratified sampling technique that was focused upon ensuring that the commissioning sources were adequately represented in the experiment. After determining the number of participants needed from each commissioning source (relative to the overall population percentages), individuals were chosen at random from the available pool of candidates. The only exception to this was the method by which the Academy participants were selected. As opposed to being randomly drawn like the ROTC and OTS students, some of the Academy commissioned officers volunteered to participate. By

statute, Academy graduates are allowed 60 days of leave upon graduation. Given that the ASBC test program started approximately 5 weeks into the 60 day vacation timeframe, any Academy participants who desired to attend the ASBC were expected to voluntarily 'give-up' approximately 4 weeks of their paid vacation time. Of the graduating class of 950 from the Academy, many were not willing to give-up their vacation. Because Academy officials could not easily require graduates to attend the course, a decision was made to solicit volunteers instead. ASBC officials had little influence over this decision. Due to this non-random selection process, it is possible that the 'typical' Academy graduate may not necessarily be represented in the experiment. Specifically, volunteering implies that the participants may be more likely to want to be at ASBC than those who did not volunteer—this observation is shown to be true later in this chapter.

As will be seen below, there were two effects that resulted from this: 1) Academy graduates were underrepresented in the sample relative to their proportion in the population of lieutenants—the Academy officials could not get enough cadets to volunteer and 2) it was likely that some type of bias was introduced into the results given that individuals were allowed to volunteer. Unfortunately, it was not possible to assess what differences existed between the self-selected Academy graduates and the broader population of Academy graduates. Although this might limit the generalizability of my conclusions for Academy graduates as a whole, I believe that the conclusions drawn from the overarching analysis are still applicable to the population of Air Force lieutenants.

Demographic Characteristics

Because the test subjects in this experiment are human beings, there are many demographic traits that could be considered important for determining whether or not the sample of participants is representative of the wider population. For example, if one is concerned that the university that one attends has a significant impact upon the variation between participants' performance or attitudes, then it would be important to ensure that the university backgrounds of the sample group are representative of the population. Chapter 4 described the type of demographic data that was collected for this analysis. In total, there were 16 questions asked of

participants that focused on demographic characteristics. Of these 16 variables, three—commissioning source, ethnicity, and gender—were considered to be the most critical because they are hypothesized to contribute to the most variance to the lieutenants' cognitive knowledge and their attitudes toward the Air Force.

Commissioning source, ethnicity, and gender are focused on in this section. Aside from their importance in contributing to variance within the population, these three variables also tended to be easier to control for when ensuring proportionality relative to the population. Although I was responsible at ASBC for constructing the experiment design, I had little control over how the selection processes were implemented. Instead, we relied upon the Air Force Personnel Center (AFPC) to carry-out the selection methods. Relative to AFPC's experience with previous studies of this nature, the variables commissioning source, ethnicity, and gender were well-understood and the AFPC had a method for attempting to match the sample as close to the population as possible. In this case, instructions were given to AFPC to match the commissioning source proportions as close as possible, while considering ethnicity and gender as secondary controls. In total, there was a sample size of 607 cases chosen—this represented roughly 14% of the total population of lieutenants who entered the Air Force in 1998 . Of the 607, 311 were assigned to the treatment group and 296 students were identified to participate in the control group. With this in mind, we now consider each of the demographic variables.

Commissioning Source

When CORONA established the need for ASBC in 1996, one of the major issues that the policymakers were concerned with was the fact that new officers were receiving different types and amount of education about the Air Force. For example, Air Force Academy graduates spend four years learning about officership and Air Force/military training on a full-time basis compared to OTS and ROTC graduates who receive considerably less time on similar material. One goal of ASBC is to baseline all officers with the same training.

As previously stated, AFPC had some difficulties in initially assembling a proportionate sample of commissioning sources relative to an equivalent population proportion. Figure 5.1 shows that the proportion of the various commissioning sources across the treatment, control and population groups. There are 2 observations evident from this graphic: 1) Academy graduates are underrepresented relative to the population proportion (although the proportions are fairly consistent), and 2) the proportion of OTS and ROTC participants in the groups were not as consistent. In the case of the treatment group, OTS was underrepresented relative to the population proportion and ROTC was overrepresented. The opposite was true for the control group. The implication of this inconsistency and the slight underrepresentation of the Academy participants is that the results could be slightly skewed based upon the their scores and attitudes. Another concern would be that during the course, there isn't as much 'mixing' of commissioning sources as would be expected—this could have an impact upon exposure of one group of commissioning source graduates to another. One way to determine if this has an impact on the scores is to compare differences between treatment and control groups on the pre-test. Statistical tests were performed on both the cognitive and the affective tests to determine if significant differences existed. Although this analysis will be show in greater detail later in this chapter, the numbers showed that there were no differences on the cognitive test between the treatment and control groups, and only slight differences between the two on the affective survey. In general, I concluded from this analysis that the groups that were selected for the treatment and control groups were in most ways, equivalent to one another. This is not to say that there is no room for improvement on the selection methods—if economically and practically possible, it would be beneficial to ensure a fully randomized design in future studies of this same topic.

Figure 5.1 Commissioning Source Comparisons

Population data from AFPC; Treatment and Control Data from ASBC Survey (August 1998)
n=607 (n=311 for the treatment group and n=296 for the control group)
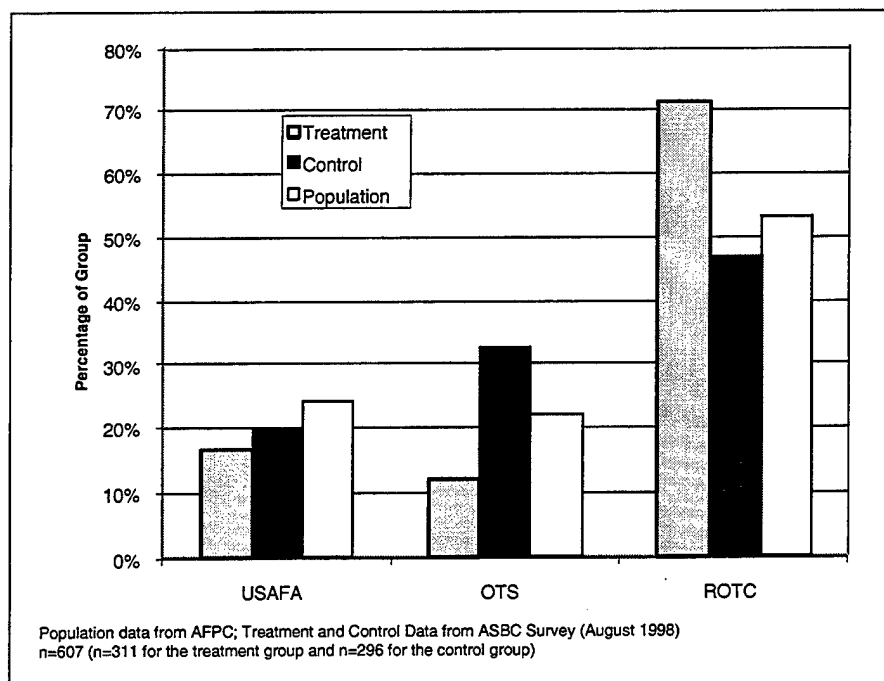
Ethnicity

The Air Force captures ethnicity data on its servicemembers relative to six general categories: American Indian/Alaskan, Asia/Pacific Islander, Black (Non-Hispanic), Hispanic, White (Non-Hispanic), and other. Figure 5.2 shows the break-out of ethnicity for the treatment, control, and the population of second lieutenants. The majority of participants (treatment and control) were White (79% and 82% respectively) relative to 81% for the overall population of second lieutenants. For the most part, ethnicity characteristics of the treatment, control, and population appear to be very similar.

Figure 5.2 Ethnicity Comparisons

Population data from AFPC; Treatment and Control Data from ASBC Survey (August 1998)
n=607 (n=311 for the treatment group and n=296 for the control group)
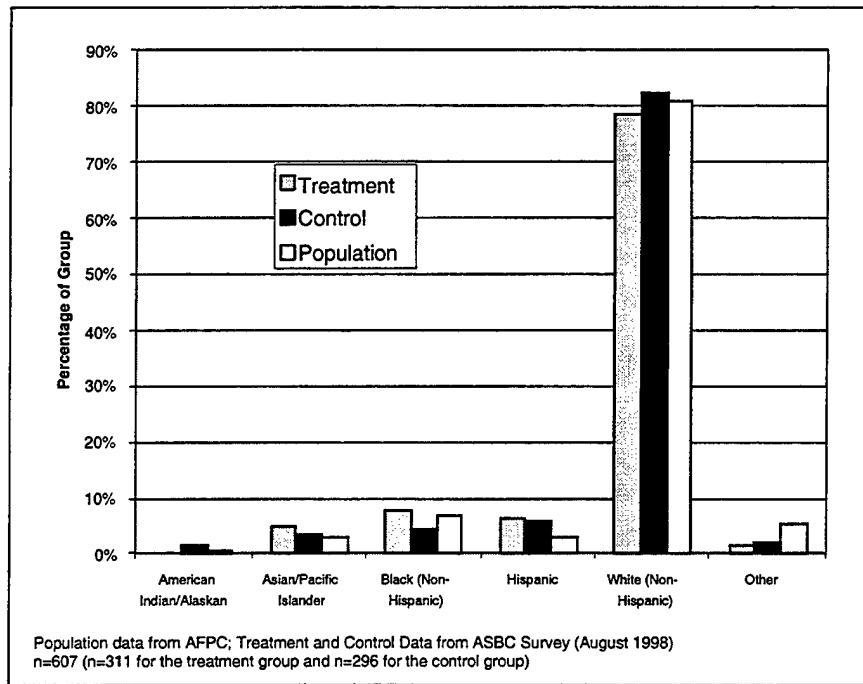
Gender

Figure 5.3 shows gender comparisons between the control and treatment groups and the overall population for second lieutenants. It is apparent from this graphic that the treatment and control group participants are similar to one another and to the overall population as well.

Figure 5.3 Gender Comparisons

Population data from AFPC; Treatment and Control Data from ASBC Survey (August 1998)
n=607 (n=311 for the treatment group and n=296 for the control group)
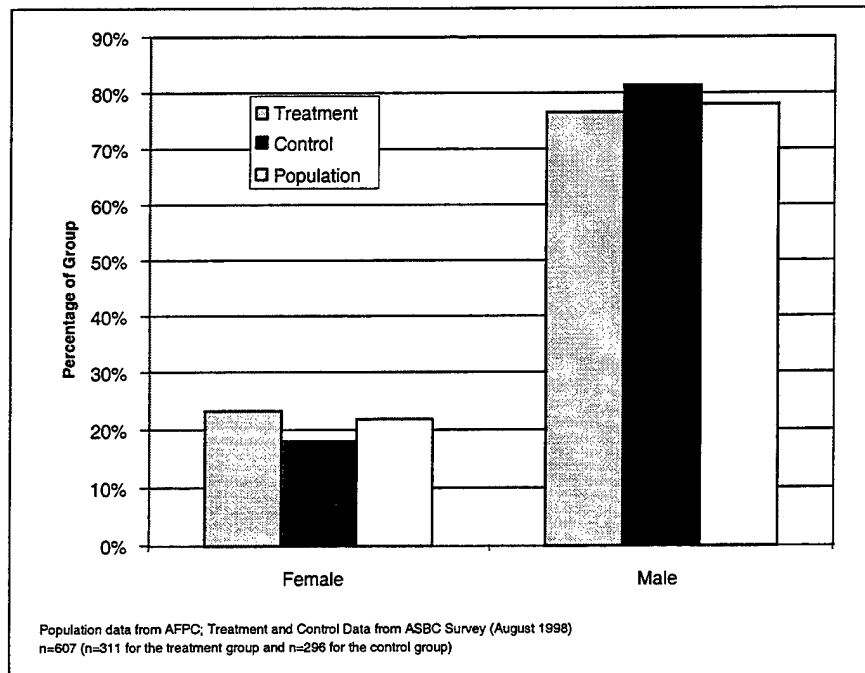
Why wasn't an AFSC variable considered?

One question that may arise among Air Force circles is why I didn't focus upon the Air Force Specialty Code (AFSC) variable to ensure that the participants represented a diverse background of job specialties (pilots, non-pilots, etc.). My answer to this question is that the lieutenants who attend ASBC have had virtually no training in their job specialty prior to arrival at Maxwell AFB. Some of the participants who will be entering pilot training may have taken preliminary flight screening courses, but the vast majority of participants will not have had any occupational experience whatsoever. Although one could make an argument that there may be a correlation between attitude and/or cognitive ability and AFSC choice (or other demographic variables like age, education level, etc.), I believe that this correlation probably is not important for purposes of this study. This is an action item that should be addressed in future analyses.

Conclusions on the Samples Chosen

The primary reason this analysis has been highlighted is to demonstrate that the treatment and control groups, for the most part, were representative of the population of lieutenants and that they were equivalent to one another—this was important for two reasons: 1) the generalizability of results to the larger population and 2) to ensure that the treatment and control groups have a similar baseline of knowledge and attitudes. Examination of the demographic characteristics from the three variables indicates that the sample that was chosen for both the treatment and the control groups appear to match the population fairly well. For the situations described where the proportions were under/over represented, statistical analysis on pre-test cognitive scores (performed in later sections of this chapter) indicated that the treatment and control groups had statistically equivalent scores. The bottom line to this discussion is that even though there were some demographic differences between the treatment and control groups, it does not appear that such differences had an impact of one group scoring significantly higher than another.

Cognitive Test Results

This section presents the results from the cognitive test that was given to both the treatment and control groups as part of the overarching experimental design. This section, like the next one (that focuses upon affective survey results), is organized around the five research questions that were listed at the beginning of this chapter. The test that was used to measure the knowledge level of the treatment and control groups was comprised of 100 questions and is attached as Appendix E to this document. Before diving into the analysis related to the five questions, however, it was first important to determine if the treatment and control groups were equivalent with respect to their understanding of the cognitive material. More detailed description and citations on the statistical methods that were performed in both this section and the affective analysis section can be found in Appendix G of this document.

Treatment and Control Group Equivalency

The one concern that was raised in the previous section was focused upon whether or not the treatment and control groups were identical to one another with respect their baseline knowledge prior to attending ASBC. Given that the groups had slightly different mixes of commissioning source participants, there was some possibility that differences existed. To address this concern, a statistical test was performed to determine if the two groups entered the experiment with the same level of knowledge. As will be seen throughout this chapter, I designed all statistical tests around hypothesis statements to facilitate the analysis.

Aggregated Comparison

The following hypothesis statement is one such example. In this case, the hypothesis is that the aggregated mean scores on the cognitive pre-test of the treatment group is equivalent to the mean score on the cognitive pre-test for the control group. The null hypothesis is that the means between the two groups are statistically equivalent; the alternative hypothesis is that they are different. To determine if a difference existed, a t-test was performed between the two groups' means—the results of this analysis are shown in Figure 5.4 on the following page.

Hypothesis Statement: The aggregated mean score on the cognitive pre-test for the *treatment group* is equivalent to the mean score on the cognitive pre-test for the *control group*.

H_o: Cognitive Pre-Test Mean$_{Treatment}$ = Cognitive Pre-Test Mean$_{Control}$

H_a: Cognitive Pre-Test Mean$_{Treatment}$ ≠ Cognitive Pre-Test Mean$_{Control}$

Figure 5.4 Comparison of Treatment and Control Groups on the Cognitive Pre-Test

Descriptive Statistics for Treatment and Control Groups on the Cognitive Pre-Test

			N	Mean	Std. Deviation	Std. Error Mean
PRETEST		Treatment Group	288	44.6840	13.6933	.8069
		Control Group	316	45.4177	14.2005	.7988

t-test for Equality of Means between Treatment and Control Groups (Cognitive Pre-Test)

		t-test for Equality of Means				
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
PRETEST	Equal variances assumed	-.645	602	.519	-.7337	1.1374
	Equal variances not assumed	-.646	600.078	.518	-.7337	1.1354

As indicated in Figure 5.4, the treatment group and control group had very similar, aggregated mean scores on the cognitive pre-test (44.68 and 45.42, respectively). Likewise, two separate t-tests were performed (one assuming equal variances and the other not) to determine whether or not the means were significantly different from one another. The calculated t-statistic was found to be -0.65 (p-value associated with the test was computed to be 0.52) for both tests-- this indicates that the null hypothesis cannot be rejected given that the absolute value of the t-statistic is lower than a t-critical value at an α=.05. This result indicates that both groups started at the same level of cognitive knowledge (statistically speaking) for the items tested in Appendix E and likewise supports the condition that the two groups are equivalent with respect to cognitive characteristics.

Commissioning Source Comparison

A second test for equivalency was accomplished to test for differences between the control and treatment groups for the individual commissioning sources. Like the previous section, to determine the differences, a hypothesis statement was developed that focused upon the equivalence of means between the treatment group for a commissioning source and the control

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group for the commissioning source. This same hypothesis was formulated for all three of the

commissioning sources.

Hypothesis Statement: The aggregated mean score on the cognitive pre-test for the

treatment group of a commissioning source is equivalent to the mean score on the cognitive pre-

test for the control group for the same commissioning source.

H_o: Cognitive Pre-Test Mean$_{Treatment}$ = Cognitive Pre-Test Mean$_{Control}$

H_a: Cognitive Pre-Test Mean$_{Treatment}$ ≠ Cognitive Pre-Test Mean$_{Control}$

To determine if differences existed, a t-test was used to compare the treatment group vs.

the control group for each commissioning source. The data shows that in all three cases, the null

hypothesis could not be rejected: meaning that the groups were statistically equivalent. Figure

5.5 shows the graphical output from this analysis. Figures 5.5a, 5.5b, and 5.5c show the

statistical analysis.

Figure 5.5 Cognitive Pre-test Mean Scores by Commissioning Source (Treatment and Control)
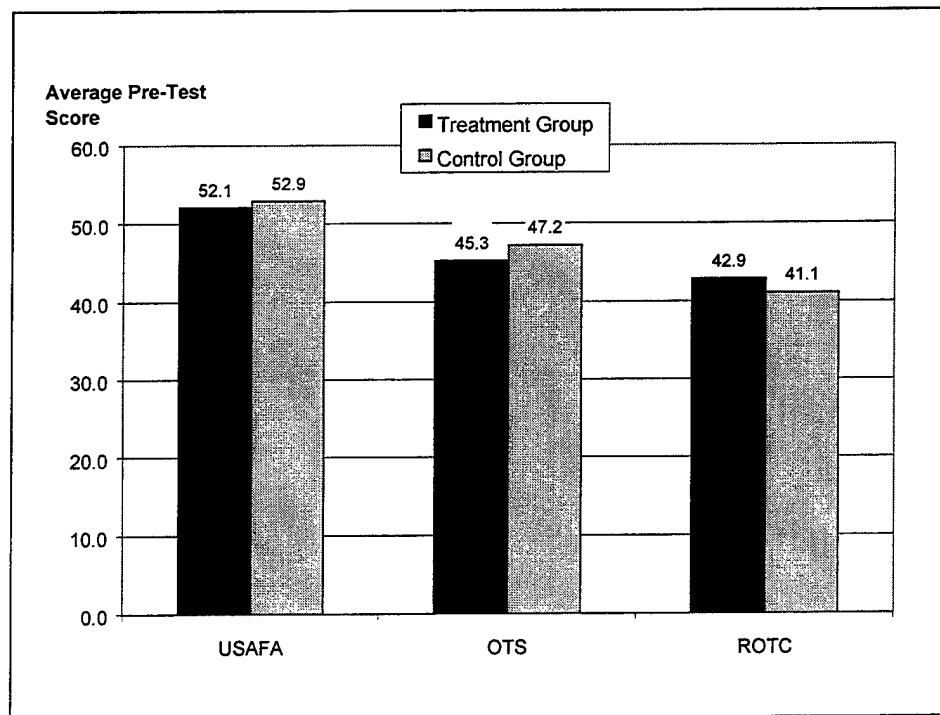
Figure 5.5a Comparison of USAFA Treatment and Control Group Mean Scores

	USAFA	N	Mean	Std. Deviation	Std. Error Mean
PRE-TEST	treatment	48	52.0833	11.5129	1.6617
	control	62	52.9032	9.9469	1.2633

USAFA Treatment and Control Groups

		t-test for Equality of Means				
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
PRE-TEST	Equal variances assumed	-.400	108	.690	-.8199	2.0488
	Equal variances not assumed	-.393	93.071	.695	-.8199	2.0874

Figure 5.5b Comparison of OTS Treatment and Control Group Mean Scores

	OTS	N	Mean	Std. Deviation	Std. Error Mean
PRE-TEST	treatment	35	45.2571	15.0437	2.5429
	control	102	47.2353	14.3873	1.4246

OTS Treatment and Control Groups

		t-test for Equality of Means				
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
PRE-TEST	Equal variances assumed	-.694	135	.489	-1.9782	2.8513
	Equal variances not assumed	-.679	56.807	.500	-1.9782	2.9147

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Figure 5.5c Comparison of ROTC Treatment and Control Group Mean Scores

	ROTC	N	Mean	Std. Deviation	Std. Error Mean
PRE-TEST	treatment	205	42.8537	13.3878	.9350
	control	151	41.0861	14.1218	1.1492

ROTC Treatment and Control Groups

		t-test for Equality of Means				
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
PRE-TEST	Equal variances assumed	1.203	354	.230	1.7676	1.4696
	Equal variances not assumed	1.193	313.361	.234	1.7676	1.4816

This analysis shows that the treatment and control groups for each commissioning source were statistically equivalent to one another. The implication of this result is that the sampling methods, discussed earlier in this chapter, were able to allocate participants in such a way that the cognitive scores were baselined at the same level. Even though there was some initial concern based upon the lack of a random sampling methodology, this analysis shows that there is not an issue.

1. Are there pre-test differences among commissioning sources prior to attending the ASBC?

The purpose for asking this question is twofold: 1) to determine whether or not officers from different commissioning sources have different levels of knowledge and 2) to baseline such differences for purpose of comparison with respect to post-test scores. As indicated in Figure 5.5, there appear to be differences between the commissioning sources as shown by the descriptive statistics. To determine if there are statistical differences on the pre-test scores among the commissioning sources, a One-Way ANOVA test is used. The hypothesis statement associated

with the test is shown below. The null hypothesis (H_o) is defined by the joint equivalency of the means. The alternative hypothesis (H_a) states that the means are not jointly equal.

Hypothesis: The aggregated mean scores of the commissioning sources on the cognitive pre-test (treatment group) are equal to one another.

H_o: Cognitive Pre-Test Mean (Treatment)$_{Academy}$ = Cognitive Pre-Test Mean (Treatment)$_{ROTC}$ = Cognitive Pre-Test Mean (Treatment)$_{OTS}$

H_a: Cognitive Pre-Test Mean (Treatment)$_{Academy}$ ≠ Cognitive Pre-Test Mean (Treatment)$_{ROTC}$ ≠ Cognitive Pre-Test Mean (Treatment)$_{OTS}$

The ANOVA analysis presented in Figure 5.6 shows that there is a statistical difference associated with the various sources of commissioning on the cognitive pre-test. The F-statistic for the ANOVA is 9.388 and is significant at an $\alpha=0.05$. With a p-value of 0.00, the null hypothesis stated above is rejected and one can conclude that the commissioning sources' means are not equivalent. When the F-test indicates that the subgroup (commissioning sources) means are significantly different, it is usually important to determine which categories of the factor variables are significantly different from which other categories. To determine which categories are not equal to one another, a post-hoc test, called the Scheffe procedure, was chosen because the variances are shown to be homogeneous. Range tests like the Scheffe identify homogeneous subsets of means that are not different from each other. Pairwise multiple comparisons test the difference between each pair of means, and yield a matrix where asterisks in the SPSS output indicate significantly different group means at an α level of 0.05. Specifically, the Scheffe procedure performs simultaneous joint pairwise comparisons for all possible pairwise combinations of means. It uses the F sampling distribution and is used to examine all possible linear combinations of group means, not just pairwise comparisons.[118]

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[118] *SPSS Statistical Analysis Manual*, page 8-10; *SPSS Base 8.0 User's Guide*, p. 237, 1998, Chicago, IL 60611. The Scheffe tends to be a more conservative test because it has a lower rate for false positives than other similar post-hoc analyses.

As observed in Figure 5.7, the Scheffe test revealed that the Air Force Academy pretest scores differed significantly from ROTC, but did not differ significantly from their OTS counterparts.

Figure 5.6 One-Way ANOVA for Pre-Test (Cognitive) by Commissioning Source

One-Way ANOVA for Pre-Test (Cognitive) by Commissioning Source

PRETEST

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3326.284	2	1663.142	9.388	.000
Within Groups	50487.962	285	177.151		
Total	53814.247	287			

Figure 5.7 Post-Hoc Analysis on Pretest Scores (Cognitive) for the Treatment Group

Test of Homogeneity of Variances

PRETEST

Levene Statistic	df1	df2	Sig.
1.734	2	285	.178

Scheffe Post-Hoc Analysis on Commissioning Sources (Pre-Test Treatment Group)

Dependent Variable: PRETEST

	(I) COMMISSI	(J) COMMISSI	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Scheffe	USAFA	USAFA					
		OTS	6.8262	2.958	.072	-.4534	14.1058
		ROTC	9.2297*	2.134	.000	3.9781	14.4812
	OTS	USAFA	-6.8262	2.958	.072	-14.1058	.4534
		OTS					
		ROTC	2.4035	2.434	.615	-3.5864	8.3934
	ROTC	USAFA	-9.2297*	2.134	.000	-14.4812	-3.9781
		OTS	-2.4035	2.434	.615	-8.3934	3.5864
		ROTC					

*•The mean difference is significant at the .05 level.

Conclusion: This analysis demonstrates, statistically speaking, that the Air Force Academy and ROTC participants had non-equivalent scores on the cognitive test.

2. Are there post-test differences among commissioning sources at the conclusion of ASBC?

Similar to the previous analysis, the purpose of this question was to demonstrate whether or not there are differences among the commissioning sources. The hypothesis associated with the outcome to this question is that the ASBC provides a common foundation so that all of the treatment group participants depart ASBC with the same level of knowledge. Figure 5.8 shows the descriptive statistics associated with the mean post-test scores, by commissioning source. It is apparent from the Figure, that the participants had similar test scores, with the Academy graduates having the highest average score at 75.4 with the ROTC and OTS following at 74.5 and 72.9 respectively.

Figure 5.8 Average Post-Test Scores (Cognitive) for the Treatment Group
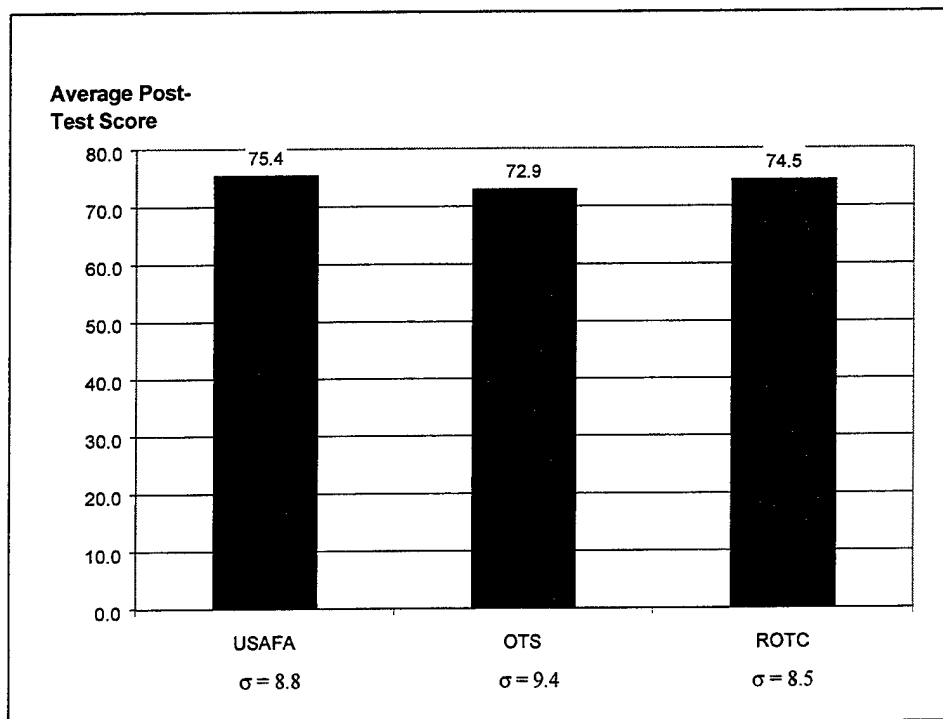
Although differences do exist on the post-test, it is not clear from Figure 5.8 if statistical differences exist. To determine if participants had achieved the same level of knowledge (in a statistical sense), a One-Way ANOVA was conducted to determine if there were differences within the treatment subgroups (source of commission) on the post-test. The null and alternative hypotheses are stated directly below and Figure 5.9 shows the ANOVA analysis.

Hypothesis: The aggregated mean scores of the commissioning sources on the cognitive post-test (treatment group) are equal to one another.

H_o: Cognitive Post-Test Mean (Treatment)$_{Academy}$ = Cognitive Post-Test Mean (Treatment)$_{ROTC}$ = Cognitive Post-Test Mean (Treatment)$_{OTS}$

H_a: Cognitive Post-Test Mean (Treatment)$_{Academy}$ ≠ Cognitive Post-Test Mean (Treatment)$_{ROTC}$ ≠ Cognitive Post-Test Mean (Treatment)$_{OTS}$

Figure 5.9 One-Way ANOVA for Pre-Test (Cognitive) by Commissioning Source

One-Way ANOVA for Post-Test (Cognitive) by Commissioning Source

POSTTEST

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	126.912	2	63.456	.840	.433
Within Groups	21522.918	285	75.519		
Total	21649.830	287			

In contrast to the analysis conducted in Figure 5.6, Figure 5.9 shows that there are not any statistically significant differences among the commissioning sources' post-test mean scores. Specifically, the F-statistic for the ANOVA was calculated to be .840 with a p-value of .433. This means that one cannot reject the null hypothesis (stated above) at a significance level of $\alpha=0.05$ and implies that the commissioning sources mean scores on the post-test are not statistically different from one another.

Conclusion: These data suggest that while there are some significant differences among commissioning sources on the pre-test, the attendance at the 7-week course

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reduces the effect of commissioning source on test performance. This, in essence, has the effect of neutralizing the impact of the commissioning source and brought everybody to the same level of cognitive knowledge after having attended the course. This, of course, is one of the goals for the Air and Space Basic Course (ASBC).

3. *Is there a difference in the post-test scores as a result of participating in the* Blue Thunder *Exercise?*

The ASBC's capstone exercise, *Blue Thunder,* is conducted during the sixth week of the course. As previously mentioned in Chapter 3 of this dissertation, *Blue Thunder* focused on the employment of air forces, in concert with land and sea operations, at the operational and tactical levels of war. *Blue Thunder* simulates a Joint Air Operations Center (JAOC) and two Wing Operations Centers (WOC). Officers apply the basic concepts of air campaign planning in a dynamic educational environment. This environment requires each person to continually assess the effectiveness of the campaign plan and if need be to modify the plan to better achieve the commander's objectives. This exercise is the first experience that the students had in applying the concepts of aerospace power learned during the course and it was expected that participation in the course would raise the cognitive scores of the participants. This hypothesis and associated null and alternative hypotheses are stated below.

Hypothesis: The Blue Thunder exercise increased the Cognitive test score.

H_o: Cognitive Post-Test Mean (Treatment)$_{Before\ Blue\ Thunder}$ = Cognitive Post-Test Mean (Treatment)$_{After\ Blue\ Thunder}$

H_a: Cognitive Post-Test Mean (Treatment)$_{Before\ Blue\ Thunder}$ < Cognitive Post-Test Mean (Treatment)$_{After\ Blue\ Thunder}$

To determine if Blue Thunder has an impact upon cognitive test scores, the treatment group is randomly split into two separate subgroups as indicated in Figure 4.2. One subgroup took the cognitive post-test prior to participating in Blue Thunder and the other group took the same test afterwards. The post-test scores from both groups were compared against one

another by use of a t-test.   Figure 5.10 shows the descriptive statistics for the post-tests for both

subgroups and indicates that the subgroup that took the post-test before Blue Thunder scored

higher than the subgroup that took it afterwards (76.2 vs. 72.7). The t-test from this analysis

indicated that the null hypothesis (listed above) could be rejected at an α=.05. Figure 5.11 shows

the test scores broken out by the commissioning sources and indicates a similar relationship.

Figure 5.10 Mean Scores for Blue Thunder

Mean Cognitive Post-Test Scores for Treatment Group

		N	Mean	Std. Deviation	Std. Error Mean
	Before Blue Thunder	143	76.2308	8.6437	.7228
	After Blue Thunder	145	72.7448	8.4020	.6978

t-test Comparison Between Before Blue Thunder and After Blue Thunder Post-Tests (Treatment Group)

		t-test for Equality of Means			
		t	df	Sig. (2-tailed)	Mean Difference
POSTTEST	Equal variances assumed	3.470	286	.001	3.4859
	Equal variances not assumed	3.470	285.490	.001	3.4859

Figure 5.11 Impact of *Blue Thunder* Upon Commissioning Source Cognitive Test Scores
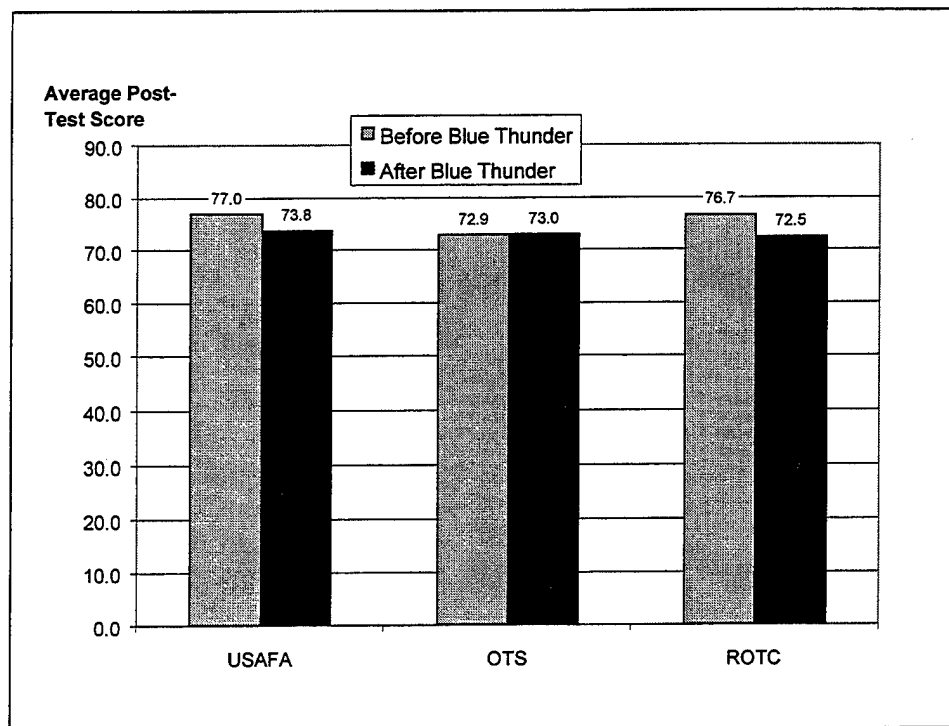
Conclusion: Test scores decreased as a result of *Blue Thunder*. Although the initial hypothesis was that *Blue Thunder* would increase test scores, I believe that test scores decreased because of the fact that the students who took the post-test afterwards did not have the immediacy of studying for the exam. In other words, there is an issue associated here with short-term, memorized skills possibly having deteriorated during the week-long exercise. In any case, further research in this area would be beneficial to attempt to quantify which types of skills were lost and why they weren't reinforced (even more strongly enhanced) by the *Blue Thunder.* This implication of this result is that ASBC should reconsider changing the Blue Thunder in order to reinforce concepts learned during the academic phase of the course.

4. Does the ASBC have an impact on participants?

Impact in a cognitive sense is measured by the change in test scores from pre-test to post-test. To assess whether or not the ASBC has an impact upon the treatment group, the

scores from pre- to post-test are compared. Scores by commissioning source are shown in

Figure 5.12. It is apparent from this figure that the scores for all of the commissioning sources

increased by considerable amounts. The largest gain occurred within the Air Force ROTC

subgroup. They averaged an overall increase of close to 32 percentage points, while the OTS

subgroup averaged almost a 28 point gain. The Air Force Academy participants averaged slightly

greater than a 23 percentage point gain. Even though these descriptive statistics show large

changes, it was also necessary to compare the differences in an inferential manner as well.

Figure 5.12 Pre-Post-test Score Comparisons
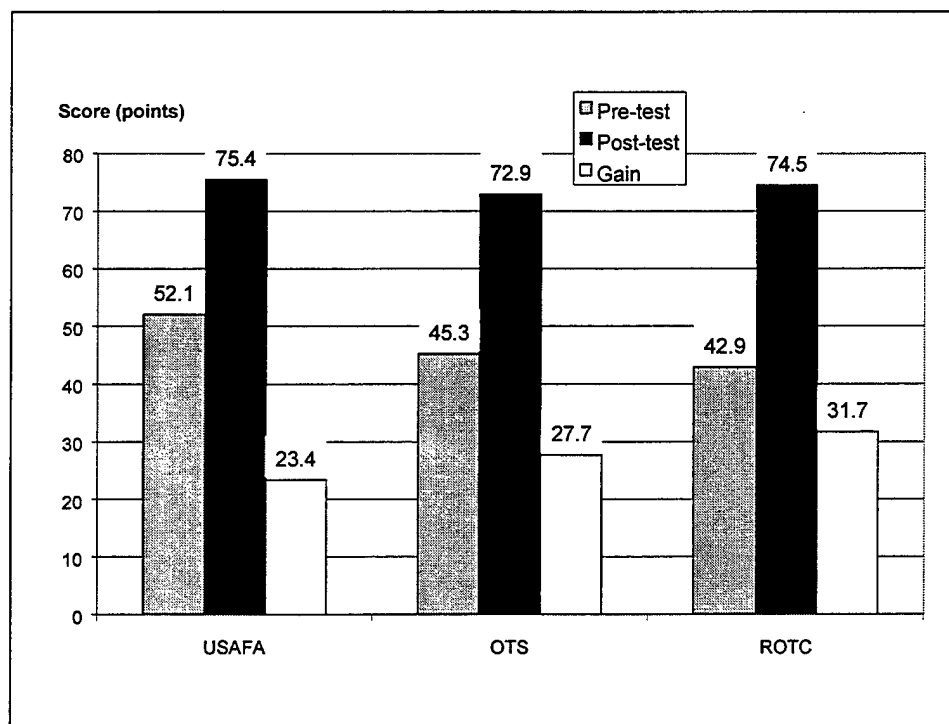
To compare the pre- and post-tests in an inferential manner, a paired sample t-test was

conducted. This procedure compares the pre- and post-test scores for each treatment group

participant and determines if the change from pre- to post-test are significantly different. The

hypothesis of this question is that the post tests were significantly different than the pre-test

scores and is expressed below along with the null and alternative hypotheses.

<u>Hypothesis</u>: The treatment group increased their scores from the pre to the post-test.

H_o: Cognitive Pre-Test Mean (Treatment) = Cognitive Post-Test Mean (Treatment)

H_a: Cognitive Pre-Test Mean (Treatment) < Cognitive Post-Test Mean (Treatment)

Figure 5.13 shows the paired samples statistics for the treatment for the pre-test and post-test scores. It is apparent from Figure 5.13 that the average increase from pre- to post-test was roughly 30 points. The calculated t-statistic for the procedure was 36.96 that translated into a p-value of 0.00. This t-statistic is significant at a significance level of 0.05 that requires rejection of the null hypothesis stated above. Because the change was statistically significant and positive in direction, it is **concluded that the course does have a positive impact upon the participants**.

Figure 5.13 Paired Sample Statistics for Treatment Group

Descriptive Statistics for Treatment Group (Cognitive)

	Mean	N	Std. Deviation	Std. Error Mean
POSTTEST	74.4757	288	8.6853	.5118
PRETEST	44.6840	288	13.6933	.8069

Paired Samples t-test of Treatment Group Cognitive Post-test and Pre-test

		POSTTEST - PRETEST
Paired Differences	Mean	29.7917
	Std. Deviation	13.6805
	Std. Error Mean	.8061
95% Confidence Interval of the Difference	Lower	28.2050
	Upper	31.3783
	t	36.956
	df	287
	Sig. (2-tailed)	.000

5. Does attending ASBC provide more knowledge than not attending the course?

One of the main purposes for assembling a control group is to compare with the treatment group to show whether or not the treatment group's gains (evidenced above) are actually due to the course as opposed to just their 'growth' over a 7 week timeframe. Two statistical tests are used to determine whether or not the ASBC actually provides more knowledge than not attending the course: the first compares relative gains from pre to post-test for treatment and control groups; the second compares the final post-test scores between the treatment and control groups.

The hypothesis associated with the first test is shown below. To determine how much test scores increased for both test groups, the relative percentage increase was calculated from pre- to post-test. For example, examining Figures 5.14 and 5.16, the average increase in scores

for the treatment group was roughly 88 percent while the average decrease for the control group

was approximately 12 percent. A t-test was used to compare means of the treatment and control

groups. The results of this test are also found in Figure 5.14 and show that the null hypothesis

(shown below) should be rejected at a significance level of $\alpha=0.05$.

<u>Hypothesis</u>: The mean cognitive score for the treatment group increased more than the control group.

H_o: (Post-Test - Pre-Test)$_{Treatment\ Group}$ = (Post-Test - Pre-Test)$_{Control\ Group}$

H_a: (Post-Test - Pre-Test)$_{Treatment\ Group}$ > (Post-Test - Pre-Test)$_{Control\ Group}$

Figure 5.14 Percentage Changes in Cognitive Scores from Pre- to Post-Test; Comparison Between Treatment and Control Groups

Descriptive Statistics of Changes from pre to post test (expressed as % change)

			N	Mean	Std. Deviation	Std. Error Mean
		Treatment Group	288	.8830	.8497	5.007E-02
		Control Group	33	-.1179	.2780	4.839E-02

Independent Samples t-test to determine if cognitive scores increased by the same amount

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	13.487	.000	6.717	319	.000	1.0008	.1490
Equal variances not assumed			14.374	121.659	.000	1.0008	6.963E-02

The second test compares the post-test scores for the treatment and control groups to

determine if there were significant differences. The hypothesis of this analysis is that the

treatment groups' scores are larger than the control groups'. To determine if the scores were

different, an independent sample t-test was performed on the data. The results of this test are

shown below in Figure 5.15. It is apparent from the analysis that the t-statistic was significant at an $\alpha=0.05$ and that the null hypothesis stated below should be rejected.

Hypothesis Statement: The mean cognitive Post-Test score for the treatment group is greater than the mean Cognitive Post-Test score of the control group.

H_o: Post-Test$_{Treatment\ Group}$ = Post-Test$_{Control\ Group}$

H_a: Post-Test$_{Treatment\ Group}$ > Post-Test$_{Control\ Group}$

Figure 5.15 Comparison of Post-Test Scores Between Treatment and Control Groups

Descriptive statistics for Post-test Scores

		N	Mean	Std. Deviation	Std. Error Mean
	Treatment Group	288	74.4757	8.6853	.5118
	Control Group	33	38.5455	18.6583	3.2480

Independent Samples t-test to determine equivalency of post-test scores

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	62.140	.000	19.283	319	.000	35.9302	1.8633
Equal variances not assumed			10.927	33.606	.000	35.9302	3.2881

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Figure 5.16 Cognitive Test Score Changes from Pre- to Post-Test
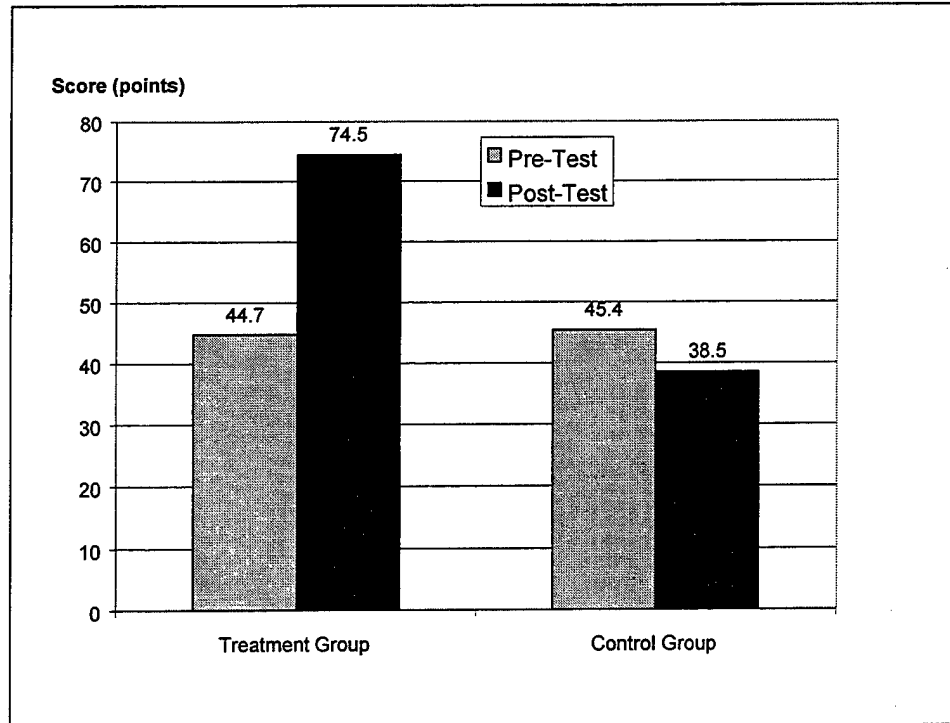
Conclusion: Cognitive test scores for the treatment group increased significantly relative to a decrease in scores for the control group. This analysis supports the hypothesis that scores increased in the short-run. In order to determine the impact of the course in the long-run, further studies should be conducted that capture changes in cognitive scores over time.

Affective Survey Data Results

As previously indicated, the affective survey focused upon attitudinal measures of the ASBC participants. Chapter 4 detailed the methodology for how the affective survey was developed, the various categories and subelements that were surveyed, and referenced a copy of the actual affective instrument (located in Appendix F). This section of the report highlights the affective results that were observed from the analysis performed on the affective data captured from both the treatment and control groups. The format for this section follows the same as the one presented in the cognitive data analysis section and is focused upon answering the five research questions. Analysis is also performed on the equivalency of the treatment and control

groups in order to show any differences between the groups that may have existed prior to participation in the ASBC.

Aggregate and Category Analysis

What makes the affective analysis challenging is, unlike the cognitive test, which yielded an overall score, the affective analysis requires that each of the 78 questions be scored separately. As presented in Chapter 4, the affective survey was constructed around seven key factors. These factors are:

- Category 1 (cat1): Integrity

- Category 2 (cat2): Service Before Self

- Category 3 (cat3): Excellence

- Category 4 (cat4): Teamwork

- Category 5 (cat5): Socialization

- Category 6 (cat6): Job Satisfaction

- Category 7 (cat7): Technical Knowledge

Each one of the 78 questions was linked uniquely to one of the factors. Aside from analyzing each question separately, to facilitate a more meaningful, and likewise aggregate analysis, the seven factors were used as the conduit for analysis. In conducting this aggregated analysis, it was necessary to first recode the data in such a way that all of the statements were interpreted in a 'positive' context: if a statement was negatively worded, student perceptions of the statement were recoded to reflect an answer to a statement as if it were positively worded. For example, if a student answered Strongly Disagree to a negatively worded statement, this type of response was recoded as Strongly Agree for a positive wording of the same statement. Similar recoding was done for all variables and all responses. By recoding all of the variables in a consistent, 'positive' light it was possible to aggregate data into means for each category and for the overall survey.

As indicated in Chapter 4, a six point Likert scale (with an omit/don't know option) was used as the measure which the participants used to assess their assessment of the specific

statements. This scale is assumed to be both linear and ordinal. For each specific measuring point along the scale, a point value was associated with the assessment. For example, Strongly Disagree = 1, Disagree = 2, Slightly Disagree = 3, Slightly Agree = 4, Agree = 5, Strongly Agree = 6. If a respondent had a mean value of 5.0 for a question (or set of questions), the person would be considered to have a relatively positive perspective given that, on average, he/she "Agrees" (Agree=5) with the positively worded statements. A mean score of 4.5 would equate to the person having an attitude somewhere between "Slightly Agree" and "Agree." Questions answered as "Don't Know/Omit" are coded as a missing value and were not used in the statistical computations. Although the percentage of responses varied by question, approximately 2% of all responses were coded as "Don't Know/Omit."

Treatment and Control Group Equivalency

Similar to the analysis performed in the cognitive section of this chapter, it was also necessary to determine if the treatment and control groups had similar attitudes prior to the start of the ASBC. This analysis was broken into two parts: 1) an aggregate analysis and 2) an analysis by the commissioning source variable.

Aggregate Analysis

The hypothesis associated with a test of equivalency at the aggregate level is expressed below. Specifically, this analysis considered whether or not the aggregated mean score on the affective pre-test was equivalent between the two groups.

> Hypothesis Statement: The aggregated mean score on the affective pre-test for the *treatment group* is equivalent to the mean score on the affective pre-test for the *control group*.
>
> H_o: Affective Pre-Test Mean (Treatment) = Affective Pre-Test Mean (Control)
>
> H_a: Affective Pre-Test Mean (Treatment) ≠ Affective Pre-Test Mean (Control)

To determine if differences existed, a t-test was performed. Figures 5.17 and 5.18 show the results of this analysis. Specifically, Figures 5.17 and 5.17a show the descriptive statistics associated with the aggregate means by category, for both the treatment and the control groups.

It is apparent from these two figures that there are some differences between the two; however,

for the most part, they appear to be closely matched.

Figure 5.17 Affective Survey Means for Treatment and Control Groups
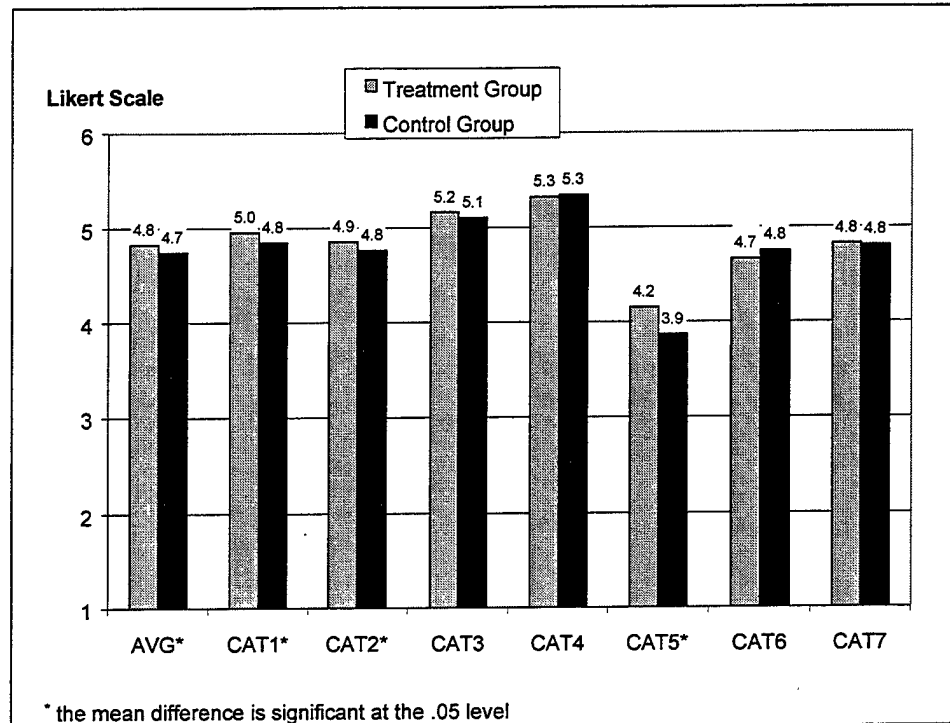
Figure 5.17a Descriptive Statistics of Affective Pre-Test

	Treatment and Control Group Descriptives					
	Mean		Std. Deviation		Std. Error Mean	
	Treatment Group	Control Group	Treatment Group	Control Group	Treatment Group	Control Group
Overall	4.8291	4.7468	.3917	.3864	2.320E-02	2.2E-02
Cat 1	4.9556	4.8476	.4540	.4321	2.689E-02	2.5E-02
Cat 2	4.8544	4.7690	.4502	.4811	2.667E-02	2.8E-02
Cat 3	5.1643	5.1064	.6360	.6459	3.768E-02	3.8E-02
Cat 4	5.3263	5.3429	.4532	.5535	2.684E-02	3.2E-02
Cat 5	4.1548	3.8630	.7940	.7948	4.704E-02	4.6E-02
Cat 6	4.6630	4.7543	.5938	.5583	3.517E-02	3.2E-02
Cat 7	4.8228	4.8077	.6414	.6362	3.799E-02	3.7E-02

To test whether or not there were statistical differences between the scores of the two

groups, t-tests are presented in Figure 5.18. The results from Figure 5.18 indicate that there are

statistical differences between the treatment and the control groups for the following areas: the overall average, Category 1, Category 2, and Category 5. In all four of these cases, the treatment group had slightly more optimistic assessments of the affective survey than did the control group. Even though there are statistical differences associated with the treatment and control groups, practically speaking the amount of difference is about one-tenth of a point.

Figure 5.18 t-tests between the Treatment and Control Group for the Affective Pre-test

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
QAVG	Equal variances assumed	.189	.664	2.551	579	.011	8.234E-02	3.228E-02
	Equal variances not assumed			2.550	577.465	.011	8.234E-02	3.229E-02
CAT1Q	Equal variances assumed	.029	.866	2.937	579	.003	.1080	3.676E-02
	Equal variances not assumed			2.934	574.624	.003	.1080	3.680E-02
CAT2Q	Equal variances assumed	1.360	.244	2.208	579	.028	8.542E-02	3.869E-02
	Equal variances not assumed			2.211	578.532	.027	8.542E-02	3.864E-02
CAT3Q	Equal variances assumed	.504	.478	1.088	579	.277	5.791E-02	5.320E-02
	Equal variances not assumed			1.089	578.705	.277	5.791E-02	5.319E-02
CAT4Q	Equal variances assumed	5.721	.017	-.394	579	.693	-1.6590E-02	4.206E-02
	Equal variances not assumed			-.396	564.506	.692	-1.6590E-02	4.190E-02
CAT5Q	Equal variances assumed	.015	.901	4.426	579	.000	.2918	6.593E-02
	Equal variances not assumed			4.426	578.209	.000	.2918	6.593E-02
CAT6Q	Equal variances assumed	1.001	.318	-1.910	579	.057	-9.1316E-02	4.780E-02
	Equal variances not assumed			-1.908	573.336	.057	-9.1316E-02	4.786E-02
CAT7Q	Equal variances assumed	.001	.980	.286	579	.775	1.515E-02	5.301E-02
	Equal variances not assumed			.286	577.777	.775	1.515E-02	5.302E-02

Independent Samples Test

Commissioning Source Analysis

To understand why these differences existed, analysis was performed within the commissioning sources. The commissioning source variable is hypothesized to be responsible for the most variance in cognitive and attitudinal scores due to the fact that the commissioning

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programs were so different. Figures 5.19, 5.20, and 5.21 (and accompanying descriptive statistics in Figures 5.19a, 5.20a, and 5.21a) show the comparison of the treatment and control group scores for the Air Force Academy, OTS, and ROTC, respectively. There are three major observations from these graphics: 1) the Academy treatment group has a more positive than the Academy control group 2) the OTS control group tends to have more positive attitude than OTS treatment group and 3) the ROTC treatment group tends to have a more positive attitude than the ROTC control group.

Although it is difficult to postulate why the OTS or the ROTC scores differed, there is a fairly obvious reason why the Academy treatment group appeared to be more optimistic than the Academy control group. One hypothesis for the difference is that the Academy participants were not randomly chosen to attend ASBC; rather, many of them volunteered to attend. Interviews with Academy personnel during Spring 1998 indicated that the type of individuals who were volunteering to attend the ASBC tended to be officer candidates who were dedicated to the military lifestyle at the Academy. Specifically, they tended to hold leadership positions and had been taking special military leadership courses than their colleagues. This is a rather broad, sweeping generalization and cannot be rigorously proven, but it does lend some context for why the treatment group was more optimistic than the control group. Simply stated, the volunteers tended to be intrinsically more motivated about the Air Force, its culture, and ASBC than their control group counterparts.

In general, the implication of these differences between control and treatment group mean that the groups are not as equitably distributed with respect to attitudinal factors as would have been desired. It is also important to highlight that even though there are statistical differences observed between treatment and control groups for the commissioning sources, the absolute differences of the overall average are relatively small (0.4 for the Academy, 0.3 for OTS, and 0.1 for ROTC). This is not to imply that none of the results from the affective analysis may be used; rather, one should use some caution in interpreting the final results because of the disparities. Likewise, these baselined scores must be considered in the final analysis to

determine how the groups' changed their perspectives at the end of the course relative to their

feelings at the beginning.

Figure 5.19 Comparison of USAFA Affective Pre-Test Mean Scores
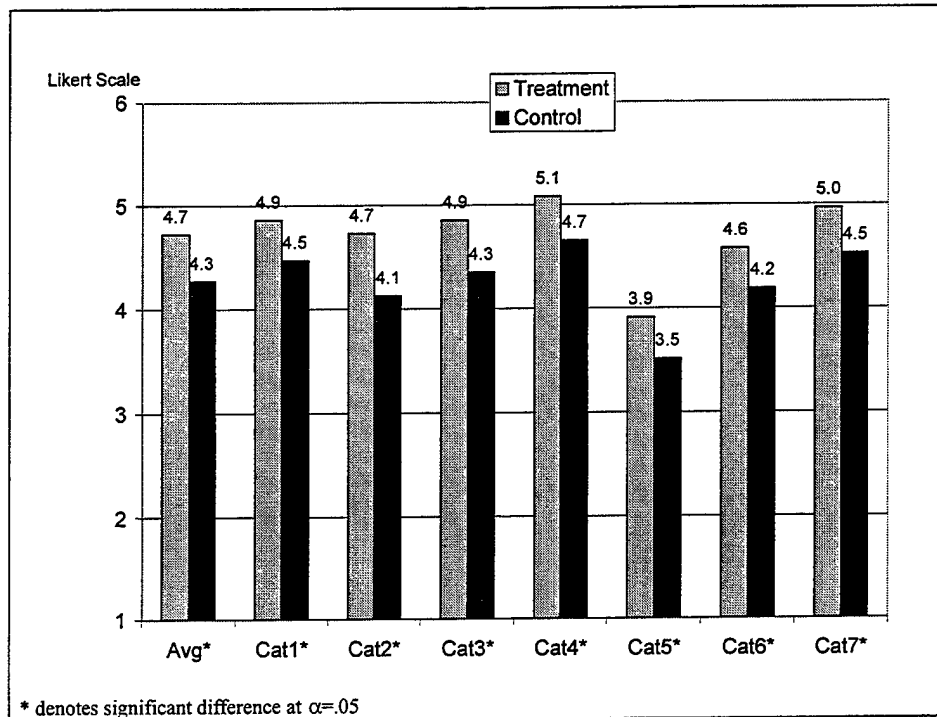
Figure 5.19a USAFA Descriptive Statistics

USAFA descriptive statistics		N	Mean	Std. Deviation	Std. Error Mean
CAT1Q	Treatment	48	4.8615	.5324	7.685E-02
	Control	34	4.4681	.4197	7.198E-02
CAT2Q	Treatment	48	4.7305	.5611	8.099E-02
	Control	34	4.1290	.4157	7.129E-02
CAT3Q	Treatment	48	4.8576	.8691	.1254
	Control	34	4.3480	.7854	.1347
CAT4Q	Treatment	48	5.0868	.5955	8.595E-02
	Control	34	4.6569	.7806	.1339
CAT5Q	Treatment	48	3.9096	.8403	.1213
	Control	34	3.5118	.4660	7.992E-02
CAT6Q	Treatment	48	4.5753	.6803	9.819E-02
	Control	34	4.1908	.4845	8.308E-02
CAT7Q	Treatment	48	4.9674	.7405	.1069
	Control	34	4.5235	.6222	.1067
QAVG	Treatment	48	4.7223	.5107	7.371E-02
	Control	34	4.2723	.3589	6.155E-02

Figure 5.20 Comparison of OTS Affective Pre-Test Mean Scores

* denotes significant difference at α=.05
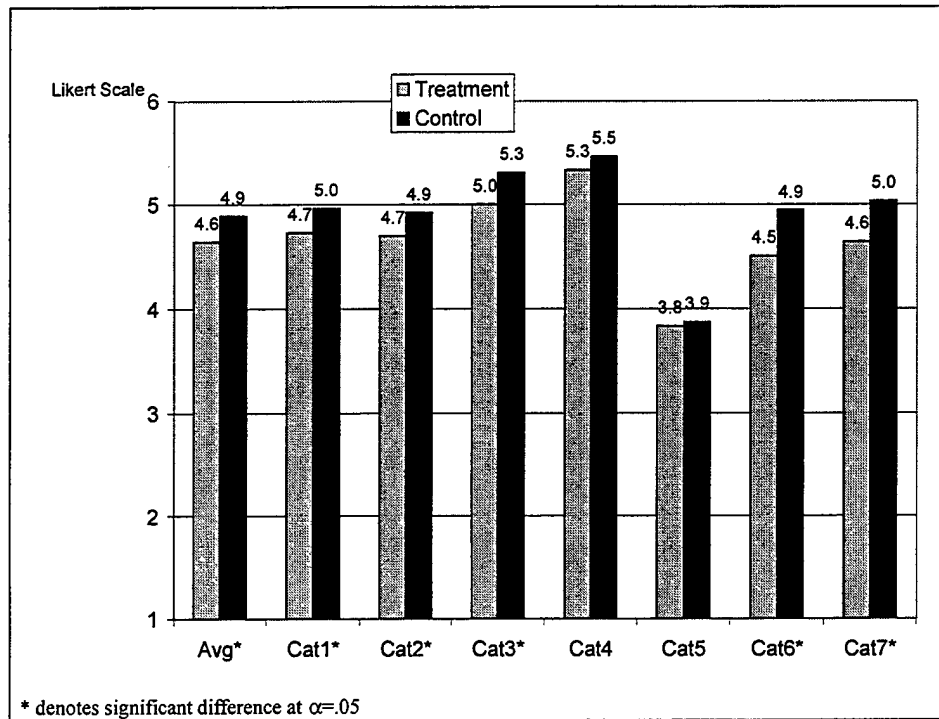
Figure 5.20a OTS Descriptive Statistics

				Std.	Std. Error
		N	Mean	Deviation	Mean
CAT1Q	Treatment	32	4.7322	.5587	9.877E-02
	Control	106	4.9626	.3973	3.859E-02
CAT2Q	Treatment	32	4.6992	.4943	8.738E-02
	Control	106	4.9276	.4207	4.086E-02
CAT3Q	Treatment	32	5.0052	.6727	.1189
	Control	106	5.3129	.4845	4.706E-02
CAT4Q	Treatment	32	5.3333	.4637	8.198E-02
	Control	106	5.4654	.4470	4.342E-02
CAT5Q	Treatment	32	3.8375	1.0006	.1769
	Control	106	3.8691	.8803	8.550E-02
CAT6Q	Treatment	32	4.5054	.6027	.1065
	Control	106	4.9434	.4706	4.571E-02
CAT7Q	Treatment	32	4.6391	.6610	.1169
	Control	106	5.0324	.5554	5.394E-02
QAVG	Treatment	32	4.6431	.4541	8.027E-02
	Control	106	4.8887	.3366	3.270E-02

OTS descriptive statistics

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Figure 5.21 Comparison of ROTC Affective Pre-Test Mean Scores

* denotes significant difference at α=.05
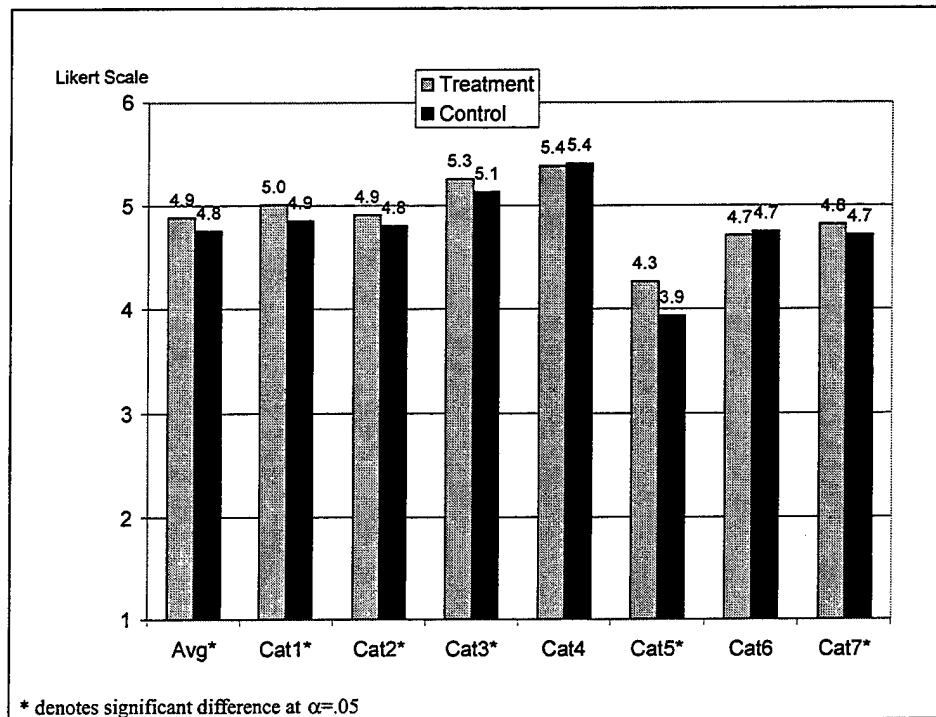
Figure 5.21a ROTC Descriptive Statistics

		N	Mean	Std. Deviation	Std. Error Mean
ROTC descriptive statistics					
CAT1Q	Treatment	205	5.0125	.4013	2.803E-02
	Control	156	4.8522	.4127	3.304E-02
CAT2Q	Treatment	205	4.9076	.4028	2.813E-02
	Control	156	4.8006	.4192	3.357E-02
CAT3Q	Treatment	205	5.2610	.5338	3.728E-02
	Control	156	5.1314	.5896	4.721E-02
CAT4Q	Treatment	205	5.3813	.3936	2.749E-02
	Control	156	5.4092	.4474	3.582E-02
CAT5Q	Treatment	205	4.2617	.7222	5.044E-02
	Control	156	3.9353	.7738	6.196E-02
CAT6Q	Treatment	205	4.7082	.5668	3.959E-02
	Control	156	4.7487	.5469	4.379E-02
CAT7Q	Treatment	205	4.8176	.6081	4.247E-02
	Control	156	4.7169	.6469	5.179E-02
QAVG	Treatment	205	4.8832	.3333	2.328E-02
	Control	156	4.7538	.3416	2.735E-02

1. Are there pre-test differences among commissioning sources prior to attending ASBC?

Similar to this question in the cognitive section, the following hypothesis captures the question to be answered here.

Hypothesis: The aggregated mean scores of the commissioning sources on the affective pre-test (treatment group) are equal to one another.

H_o: Affective Pre-Test Mean (Treatment)$_{Academy}$ = Affective Pre-Test Mean (Treatment)$_{ROTC}$ = Affective Pre-Test Mean (Treatment)$_{OTS}$

H_a: Affective Pre-Test Mean (Treatment)$_{Academy}$ ≠ Affective Pre-Test Mean (Treatment)$_{ROTC}$ ≠ Affective Pre-Test Mean (Treatment)$_{OTS}$

Some of the differences were presented in the graphical data in Figures 5.19, 5.20, and 5.21. This information is summarized in Figure 5.22 to show a comparison between the commissioning sources. It is apparent from this descriptive graphic that differences do exist. In general, ROTC participants appear to have the most optimistic scores followed by the Academy and OTS. As an interesting aside, Figure 5.23 shows treatment group attitudes about attending the ASBC--the correlation between wanting to attend ASBC and the affective score tended to mirror one another. Paradoxically, even though the Academy participants had volunteered to attend, approximately 25 percent of the Academy treatment group indicated that they did not want to be at the ASBC. It is possible that their perception of wanting to attend the course changed between the time that they volunteered and the time that they showed up at the course. Within the control group, 97 percent of the Academy participants stated that they did not want to attend ASBC.

Figure 5.22 Pre-test Means by Category and Commissioning Source
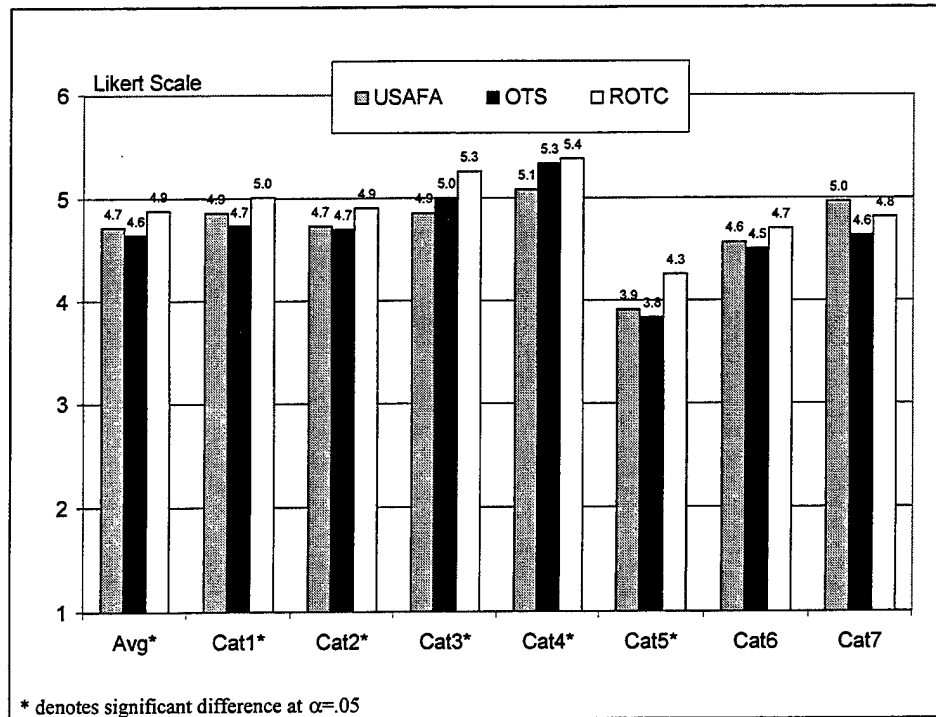
Figure 5.23 Percentage of Respondents Indicating their Desire to Attend ASBC
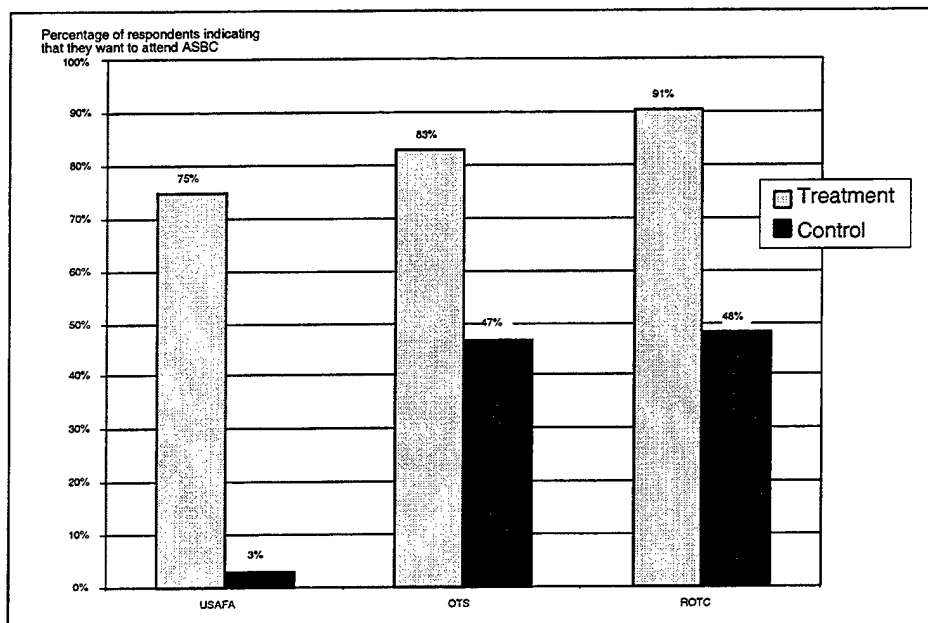
To determine if differences exist between the means of the categories for the

commissioning sources, a One-Way ANOVA (the same procedure used in the cognitive section)

was performed on the data. The result of the ANOVA analysis, shown in Figure 5.24, indicates

that all of the categories' means, with the exception for Categories 6 and 7, were shown to be

significantly different with respect to the commissioning source variable. This meant that the

commissioning sources' means were statistically different from one another: the null hypothesis

for equivalent means was rejected at the .05 level of significance. The following table highlights

the output from the analysis and supports the **conclusion that for the most part, the**

commissioning sources had statistically significant different attitudes prior to entering the

ASBC.

Figure 5.24 ANOVA Analysis for the Pre-Test Affective Survey by Commissioning Source

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
QAVG	Between Groups	2.255	2	1.128	7.697	.001
	Within Groups	41.313	282	.147		
	Total	43.569	284			
Cat 1	Between Groups	2.685	2	1.342	6.777	.001
	Within Groups	55.854	282	.198		
	Total	58.538	284			
Cat 2	Between Groups	2.087	2	1.044	5.306	.005
	Within Groups	55.467	282	.197		
	Total	57.554	284			
Cat 3	Between Groups	7.240	2	3.620	9.483	.000
	Within Groups	107.647	282	.382		
	Total	114.887	284			
Cat 4	Between Groups	3.375	2	1.687	8.661	.000
	Within Groups	54.944	282	.195		
	Total	58.319	284			
Cat 5	Between Groups	8.450	2	4.225	6.983	.001
	Within Groups	170.613	282	.605		
	Total	179.063	284			
Cat 6	Between Groups	1.583	2	.791	2.264	.106
	Within Groups	98.557	282	.349		
	Total	100.139	284			
Cat 7	Between Groups	2.089	2	1.044	2.567	.079
	Within Groups	114.742	282	.407		
	Total	116.831	284			

2. Are there post-test differences among commissioning sources at the conclusion of ASBC?

To measure whether a common, shared experience is an outcome of this experiment, I determined whether or not there are differences between the commissioning sources at the end of the course. Similar to the previous question, means were analyzed for each of the categories and the following hypothesis is constructed.

Hypothesis: The aggregated mean scores of the commissioning sources on the affective post-test (treatment group) are equal to one another.

H_o: Affective Post-Test Mean (Treatment)$_{Academy}$ = Affective Post-Test Mean (Treatment)$_{ROTC}$ = Affective Post-Test Mean (Treatment)$_{OTS}$

H_a: Affective Post-Test Mean (Treatment)$_{Academy}$ ≠ Affective Post-Test Mean (Treatment)$_{ROTC}$ ≠ Affective Post-Test Mean (Treatment)$_{OTS}$

Figures 5.25 and 5.26 show the post-test means for the affective survey by commissioning source. It is apparent from this graphic and the numerical analysis in Figure 5.26 that ROTC participants had the most optimistic viewpoints of all of the commissioning sources, followed by the OTS graduates, and then the Academy graduates.

Figure 5.25 Post-test Means by Category and Commissioning Source

* denotes significant difference at α=.05
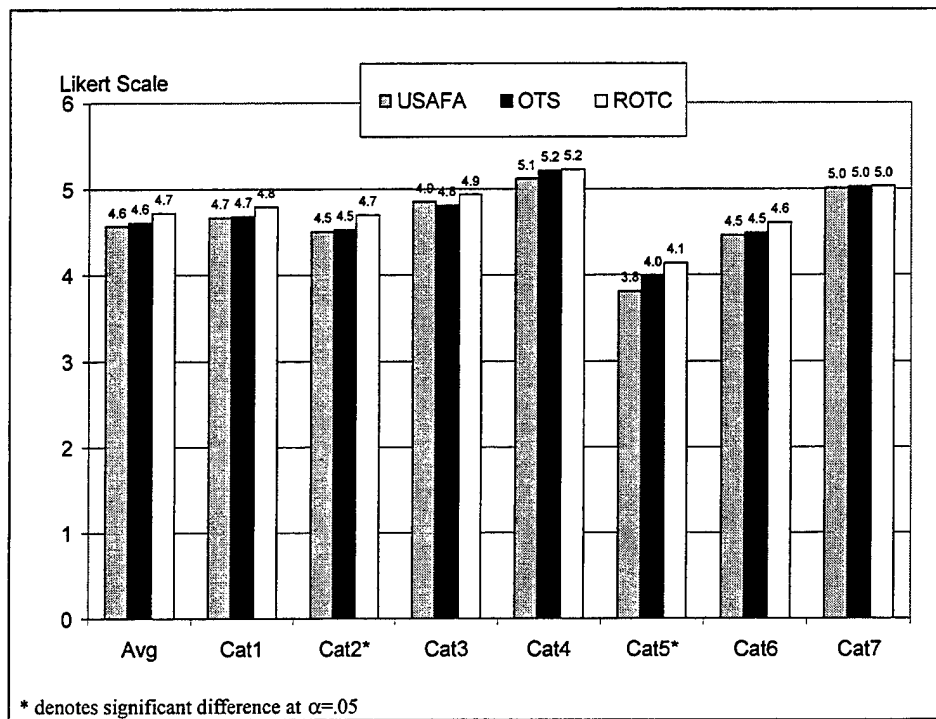
Figure 5.26 ANOVA Analysis for the Post-Test Affective Survey by Commissioning Source

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
RAVG	Between Groups	1.074	2	.537	3.180	.076
	Within Groups	47.273	280	.169		
	Total	48.346	282			
Cat 1	Between Groups	.790	2	.395	1.886	.154
	Within Groups	58.650	280	.209		
	Total	59.440	282			
Cat 2	Between Groups	1.949	2	.974	4.882	.008
	Within Groups	55.878	280	.200		
	Total	57.826	282			
Cat 3	Between Groups	.602	2	.301	.742	.477
	Within Groups	113.655	280	.406		
	Total	114.257	282			
Cat 4	Between Groups	.443	2	.221	.915	.402
	Within Groups	67.812	280	.242		
	Total	68.255	282			
Cat 5	Between Groups	4.446	2	2.223	3.856	.022
	Within Groups	161.407	280	.576		
	Total	165.853	282			
Cat 6	Between Groups	1.066	2	.533	1.380	.253
	Within Groups	108.196	280	.386		
	Total	109.262	282			
Cat 7	Between Groups	1.513E-02	2	7.563E-03	.024	.977
	Within Groups	89.051	280	.318		
	Total	89.066	282			

Apparent from this analysis, there were fewer statistical differences at the end of the course relative to when the course started--only categories 2 and 5 were found to be statistically significant in the post-test analysis. An important outcome associated with this output is that the variance from the pre-test was decreased to such an amount that five of the seven categories' means were not significantly different among the commissioning sources. **The conclusion here is that ASBC fulfilled one of its goals by minimizing variance among the commissioning sources and providing an experience to participants that baselined their attitudes in a similar way.** Figure 5.27 summarizes the change from the pre to the post-test.

Figure 5.27 Changes from Pre to Post-Test for the Affective Survey

Category	Pre-Test Statistical Differences Among the Commissioning Sources at $\alpha=.05$	Post-Test Statistical Differences Among the Commissioning Sources at $\alpha=.05$
Overall Average	Yes (p value = .001)	No (p value = .076)
Cat 1 (Integrity)	Yes (p value = .001)	No (p value = .154)
Cat 2 (Service before self)	Yes (p value = .005)	Yes (p value = .008)
Cat 3 (Excellence)	Yes (p value = .000)	No (p value = .477)
Cat 4 (Teamwork)	Yes (p value = .000)	No (p value = .402)
Cat 5 (Socialization)	Yes (p value = .000)	Yes (p value = .022)
Cat 6 (Job Satisfaction)	No (p value = .106)	No (p value = .253)
Cat 7 (Technical Knowledge)	No (p value = .079)	No (p value = .977)

3. Is there a difference in the post-test scores as a result of participating in the Blue Thunder Exercise?

When this question was first asked, it was done in the context of whether or not the inclusion of the exercise would have cognitive impacts upon the participants. As previously discussed in this chapter, the cognitive scores showed a small, yet statistically significant drop after the Blue Thunder exercise. Unfortunately, the experiment design was not designed for detecting affective changes. Rather than test how Blue Thunder affected the attitudes of the participants, all of the students were given the affective survey at the end of the course. In hindsight, this was a mistake of the research design; Blue Thunder lent itself as a catalyst for affecting attitudes. The exercise may have contributed to teamwork, core values, core competencies, job satisfaction, and technical knowledge. Instead of using the affective survey, students were provided a survey that assessed their perceptions of the exercise itself. 110 of the 311 treatment group participants completed the survey. The aggregate data show that the overall performance of this exercise was rated outstanding by 16%, excellent by 31%, satisfactory by 45%, marginal by 6%, and unsatisfactory by 3% of the students. The data showed that more

than 93% of the respondents comprehended the material and 95% understood the lesson

objectives for the exercise. The exercise objectives were achieved by 93% of the students

surveyed and 91% believed that the content within the exercise was applicable to them as Air

Force officers. Figures 5.28 and 5.29 highlight this information.

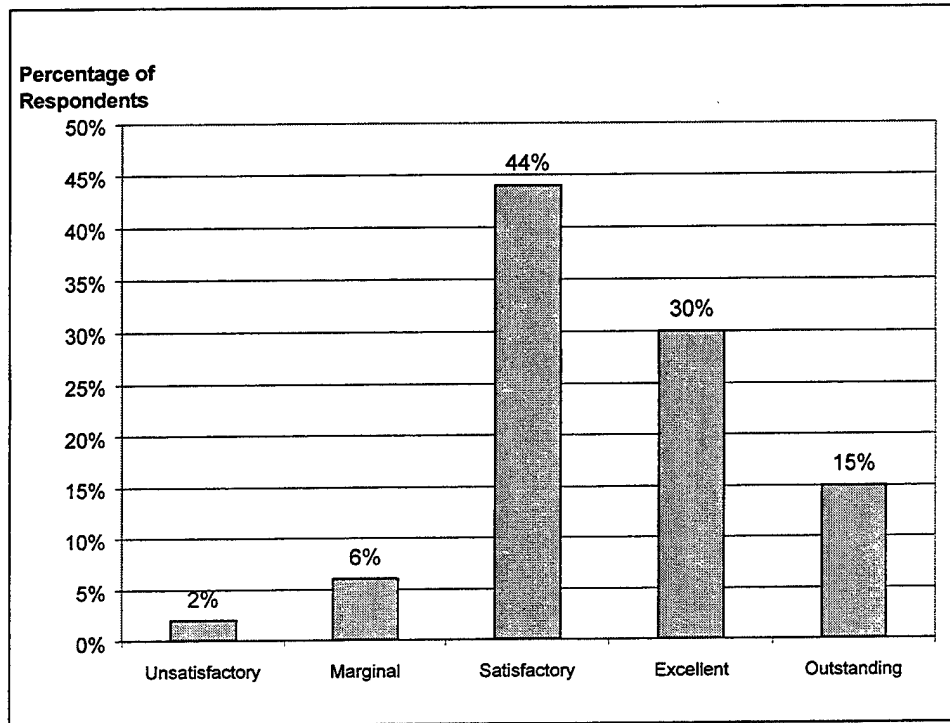**Figure 5.28 Overall Performance of the** *Blue Thunder Exercise*

Figure 5.29 The Content of the Exercise is Applicable to me as an Air Force Officer
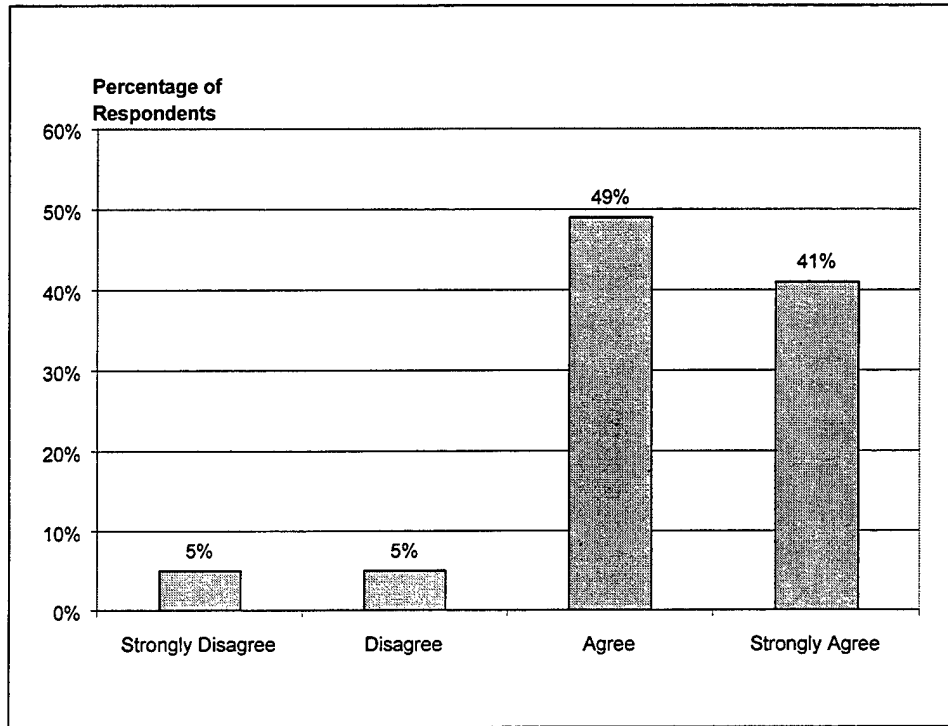
When asked what the students thought of the exercise, the following comments were received:

- It was really interesting to see how an actual war operates. The Wing Operations Center (WOC) and the Air Operations Center (AOC) gave two different perspectives of warfighting and how everything fits together. I really enjoyed my jobs and planning the Air Tasking Order (ATO). The equipment and WOC environment were quite realistic. *Blue Thunder* really brought all of the planning together. The lectures really came into play during *Blue Thunder.*

- The experience of planning and then executing a Joint Air Strategic Operations Plan (JASOP) plan was extremely informational. It was also beneficial to see the process with two different perspectives, the WOC and the Joint Air Operations Center (JAOC). In the JAOC we learned about the many different functions that played a role in producing and developing an ATO. It was great to have the hands-on experience rather than just going through the lessons. Changing up the schedule was actually unique (midnight to noon), and helped to add more to the experience. I thought it was great having the WOC out in the field, and what a great setup. It seemed like a lot of hard work went into this part of the program. It paid off.

- I thought *Blue Thunder* was an excellent idea. It really showed me some insight into how the Air Force functions in times of war. I had fun, with the exception of the sleeping environment. *Blue Thunder* did allow us to apply things that we had learned. I will remember things longer because I had a chance to apply them in a "real world" situation.

- Actually being in the situation and having to think on your feet was really beneficial. The information on our job provided in the folders was really helpful. I was able to figure out my duties easily. The feedback provided by the Joint Forces Air Component Commander (JFACC) and the Wing Commander (Wing/CC) was helpful and the briefings we had to give to the JFACC and Wing/CC were beneficial. I learned how to think on my feet.

- I liked the idea of being deployed and learning JFACC information early in my career. This information gave me a better understanding of the workings of an air war campaign and a better appreciation for the men and women who plan and execute one in real life.

- The lesson showed how all areas of the JAOC worked together. It took all the information from the lectures and the seminars and allowed us to put them in action.

- The entire *Blue Thunder* experience taught me a great deal about a lot of things that I had no prior knowledge about. It really gave me a sense of why we're here as Airmen. I definitely think it belongs in this curriculum.

- This lesson gave new lieutenants to the Air Force a chance to become familiar with the basic principles of the AF. This will give them a good background for what they may come across later in their careers.

- The realistic attacks on the base helped to show the importance of protecting the WOC while executing the war. The various positions help to show how difference Air Force Specialty Codes (AFSCs) can be vitally important to our ability to fight the war. Two days at the WOC is very good, it takes a while to learn the position and become efficient enough to respond quickly. The control center was very good a being creative with the situations. JAOC - The interaction between a large group of people to accomplish a definite goal. Learning to have responsibility for a decision that could greatly affect the outcome.

- The environment added to the lesson. Even though it was hot and uncomfortable, I liked being in the field. It gives an added realism that may be of benefit in understanding the conditions that people have to work under. True understanding doesn't occur until you actually do this part of the exercise. It solidifies the information you use in class. JAOC: The JAOC is more complex than the WOC. Everyone's job is much more critical. This part was more difficult, but it gave the best experience. It was easy to lose the big picture by getting lost in the details, but in the end I think we worked together and got the job done.

- I liked how *Blue Thunder* brought it all together; this Capstone experience was exactly what was needed. It added realism to all the lectures and seminars we have went through. The field experience is needed for Air Force Officers to have practical experience in an environment that is not Air Conditioned with maid service. Great support from the ASBC staff.

- I've never had the opportunity to acquire the big picture in the Air Force and of its mission. I appreciated the opportunity. I fully agree that the Air Force has too much stovepiping. Hopefully this new concept of ASBC and the *Blue Thunder* exercise will open the minds of all future warriors.

Although the research question cannot be answered definitively in this section like it was in the cognitive section, **it is apparent from the data presented here that the participants did find the Blue Thunder portion of the course to be worthwhile in an affective sense.** The lieutenants appeared to have enjoyed the hands-on application of being in the field and in a simulated wartime environment. Similar to the TBS program presented in Chapter 3, the Blue Thunder exercise portion of ASBC provided an environment where the participants could practice knowledge that was learned during the lecture portions of the course. Likewise, the hands-on

environment forced an atmosphere in which participants were required to work as a team to achieve an overarching goal. The bottom line is that the Blue Thunder appears to be a worthwhile experience even though the cognitive scores decreased.

4. Does the ASBC have an impact upon participants?

To answer this question, the pre- and post-test affective survey means are compared in Figure 5.30. The data is summarized by the overall average and the seven affective categories. It is apparent from this chart that all of the comparisons, with the exception of Category 7 (technical knowledge) are seen to have decreased from the pre- to the post-test. The bar chart labeled 'difference' represents the post-test score minus the pre-test score.

Figure 5.30 Comparison of Treatment Group Affective Survey Means by Pre- and Post-test
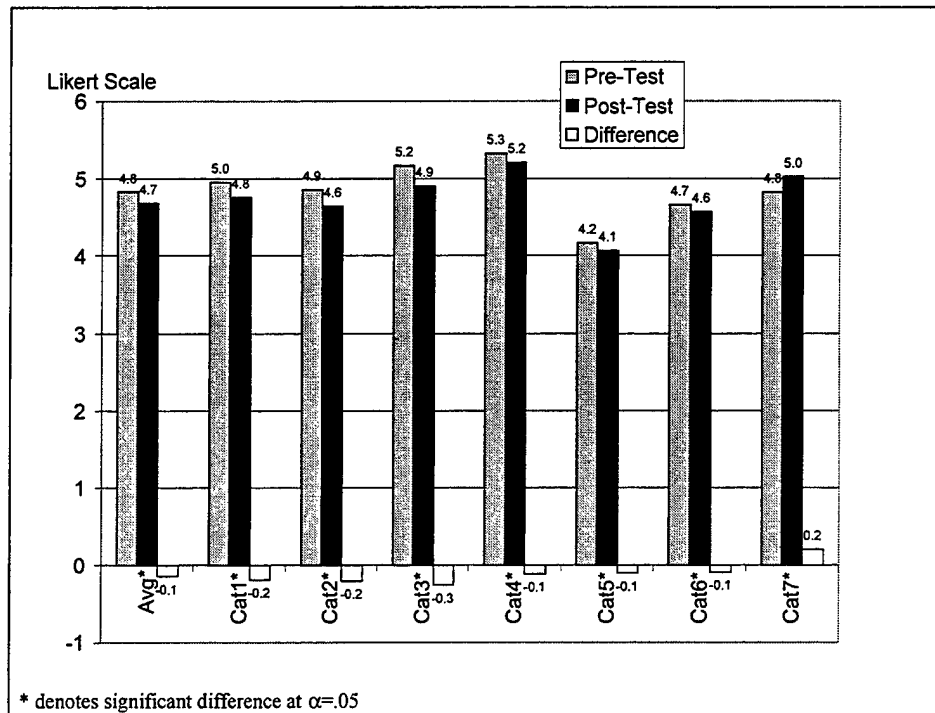
The fact that 6 of the 7 categories had negative differences indicates, that on average, the participants were less optimistic toward the Air Force and Air Force ideals than when they arrived at ASBC. To confirm whether or not the differences were statistically significant at an

α=.05, a paired sample t-test was conducted on the pre- and post-test data. The hypothesis

associated with this test follows:

Hypothesis: The treatment group increased their scores from the pre to the post-test.

H_o: Affective Pre-Test Mean (Treatment) = Affective Post-Test Mean (Treatment)

H_a: Affective Pre-Test Mean (Treatment) < Affective Post-Test Mean (Treatment)

The results from the analysis are presented in Figure 5.31.

Figure 5.31 Paired Samples t-test of Pre- and Post-Test Treatment Group Affective Survey Data

Paired Samples Test of Pre-Test and Post-Test comparison

		Paired Differences					
		Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Average	Pre-Post	.1462	.3105	1.856E-02	7.881	279	.000
Cat 1	Pre-Post	.1933	.3772	2.254E-02	8.576	279	.000
Cat 2	Pre-Post	.2090	.3518	2.102E-02	9.942	279	.000
Cat 3	Pre-Post	.2625	.5805	3.469E-02	7.567	279	.000
Cat 4	Pre-Post	.1167	.5047	3.016E-02	3.868	279	.000
Cat 5	Pre-Post	.1038	.7899	4.721E-02	2.199	279	.029
Cat 6	Pre-Post	9.200E-02	.4516	2.699E-02	3.409	279	.001
Cat 7	Pre-Post	-.1998	.6548	3.913E-02	-5.105	279	.000

The conclusion from this analysis is that the course did not improve the positive outlook of the ASBC participants with respect to the affective categories examined, with the exception of Category 7 (technical knowledge). This latter category focused upon the participants' confidence in their ability to articulate the cognitive knowledge that they learned at ASBC (Air Force Core Values, Core Competencies, and Airpower knowledge). Given the increase in their cognitive scores, presented earlier in the chapter, it is apparent that the students felt much more confident and positive about expressing their knowledge.

5. Does attending ASBC change attitudes more than not attending the course?

As indicated earlier in this chapter, one of the main purposes for using a control group in this experimental design was to be to determine whether or not the treatment group's change from pre- to post-test on the affective survey was due to the ASBC. Because the treatment group tended to be more optimistic than the control group at the start of the experiment, it was necessary to compare the change in differences to determine the effect of the course. Figure 5.32 shows the aggregate changes between the treatment and control groups for both the pre- and the post-test.

Figure 5.32 Affective Survey Score Changes from Pre- to Post-Test
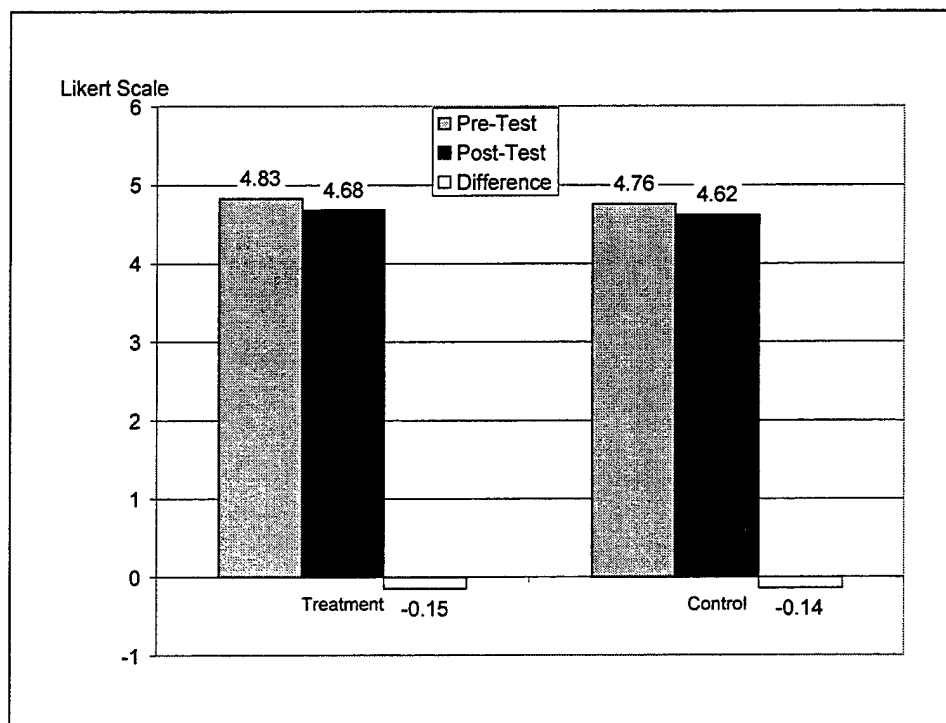
To determine whether or not the ASBC actually provided more positive attitudes than not attending the course, a statistical test was performed that compared relative gains from pre to post-test for treatment and control groups. This was considered to be an appropriate test to use because of the fact that the treatment and control groups started at different points as evidenced

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in the analysis earlier in this section: specifically, the treatment group was more optimistic than the control group. For example, examining Figure 5.33, the average decrease in scores for the treatment group was roughly 2.87% while the average decrease for the control group was approximately 2.02%. These relative changes are expressed as the mean in the Figure. An independent sample t-test was used to compare means of the treatment and control groups. The results of this test indicate that the null hypothesis (shown below) should not be rejected at a significance level of α=0.05.

Hypothesis: The mean cognitive score for the treatment group increased more than the control group.

H_o: (Post-Test - Pre-Test)$_{\text{Treatment Group}}$ = (Post-Test - Pre-Test)$_{\text{Control Group}}$

H_a: (Post-Test - Pre-Test)$_{\text{Treatment Group}}$ > (Post-Test - Pre-Test)$_{\text{Control Group}}$

Figure 5.33 Percentage Changes in Cognitive Scores from Pre- to Post-Test; Comparison Between Treatment and Control Groups

Descriptive statistics of changes from pre- to post-test (expressed as % change)

			N	Mean	Std. Deviation	Std. Error Mean
		Treatment Group	279	-2.8779E-02	6.504E-02	3.894E-03
		Control Group	41	-2.0209E-02	3.996E-02	6.240E-03

Independent samples t-test to compare change in affective scores

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	10.948	.001	-.821	318	.413	-8.5700E-03	1.044E-02
Equal variances not assumed			-1.165	75.568	.248	-8.5700E-03	7.356E-03

Conclusion: As seen in the analyses presented above the treatment and control groups aggregate scores decreased by an amount that was found to be statistically the

same. The implication of this result is that the ASBC did not increase the positive outlook of the treatment group nor did it affect the treatment group in a way that was different from the control group. Essentially, this analysis shows that the treatment group participants became less positive about the Air Force in an amount that was identical to the amount of the control group.

End of Course Survey

Quantitative measures like the ones presented in the previous two sections are important for assessing the course; however, qualitative measures are also important for determining the success of the course. During the seventh and final week of ASBC, 291 of the participants completed an "End of Course Survey." The intent of this survey was to assess the respondents' reactions to the course and determine areas for improvement. Other information that was captured included student feedback on the effectiveness of: 1) the methods of instruction, 2) the course material, and 3) the learning environment. This section summarizes the feedback. Aside from the specific data that was collected in Figures 5.34, 5.35, 5.36, and 5.37, qualitative responses were also solicited with respect to course strengths and weaknesses.

Figure 5.34 How well did ASBC accomplish its mission?

Percentage of Respondents
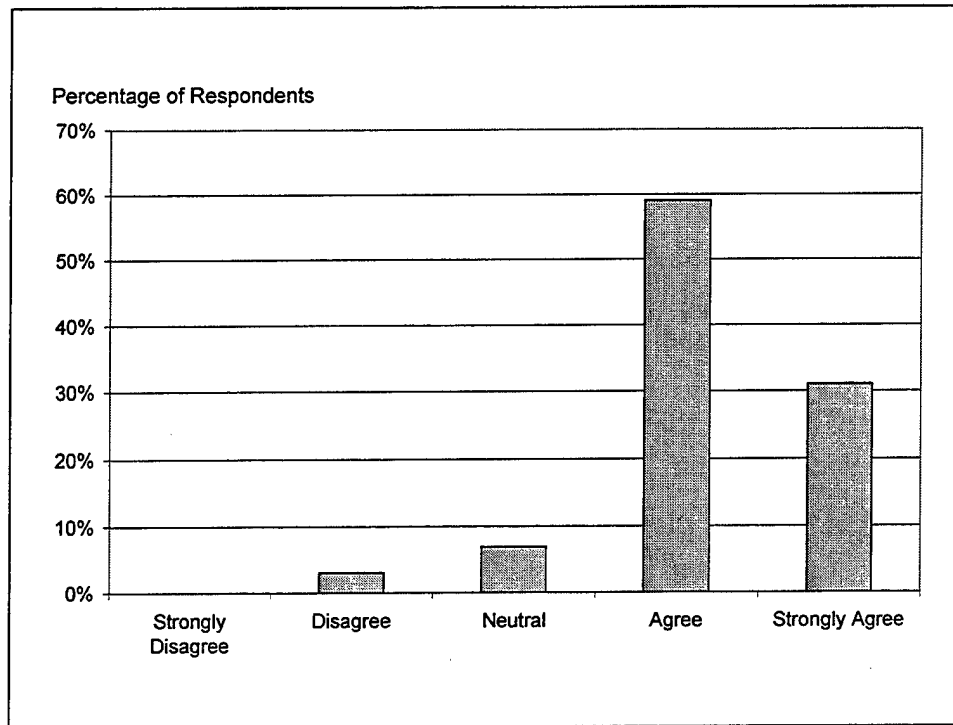
Figure 5.35 Where did the best learning occur?

Percentage of Respondents
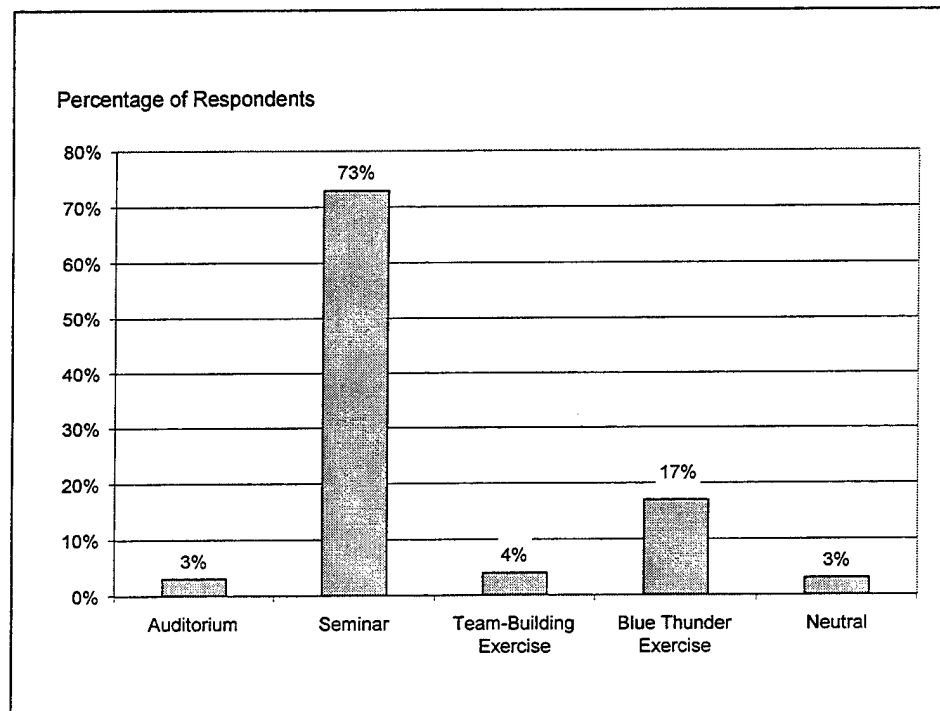
Figure 5.36 What was the overall quality of instruction at ASBC?

Percentage of Respondents

	Unsatisfactory	Marginal	Satisfactory	Excellent	Outstanding
	0%	1%	28%	50%	21%
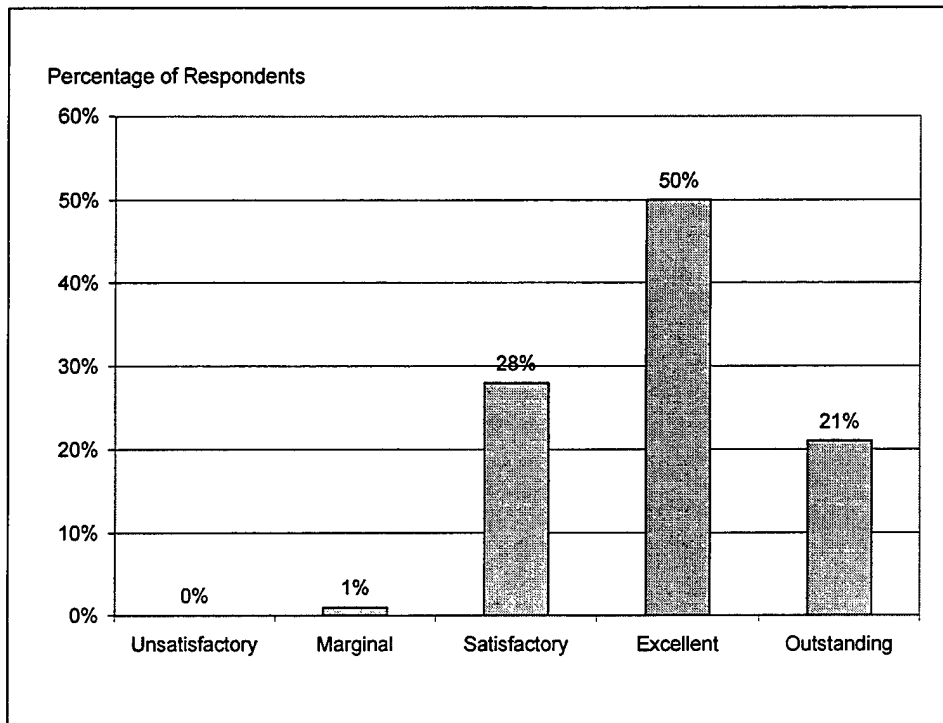
Figure 5.37 What was the overall quality of the course material at ASBC?

Percentage of Respondents

	Unsatisfactory	Marginal	Satisfactory	Excellent	Outstanding
	1%	4%	34%	44%	17%
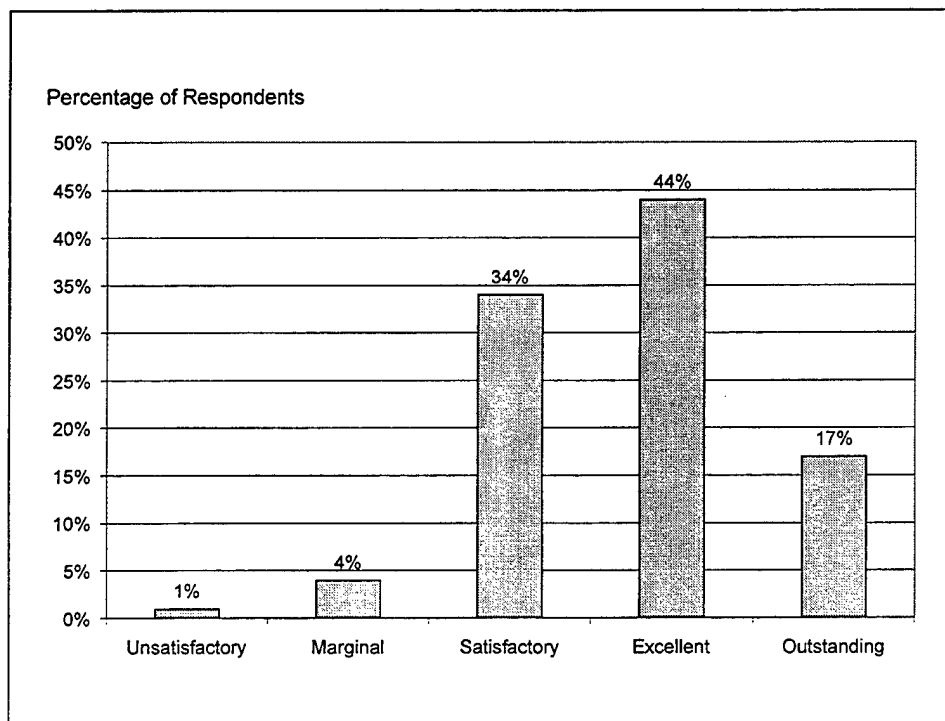
Students were also asked to provide qualitative comments on the strengths and weaknesses of the course. In general, the students appeared to enjoy the course with the exception of some specific aspects including the repetitiveness of lectures, modes of presentation, and the speed of some of the lectures. The following represent a summary of their responses:

What are the strengths of the course?

- Air power doctrine was the part of the course I took the most from. As a support officer, I now feel much more qualified to articulate the objectives and capabilities of my service. Being in a flight situation is another innate benefit of this kind of course—I always learn from my peers. The WOC was a very good learning exercise. Some of the lecturers were exceptional, and I feel privileged to have heard several general officers speak.
- The seminars, team-building exercises and *Blue Thunder* were all useful learning tools. Ultra Disc did more to build flight unity than any other activity and should definitely be kept as part of the course. In general I think the course puts down a solid foundation for an Air Force Career.
- Not having a Distinguished Graduate (DG) program was an excellent idea because everybody focuses more on learning than in competing for a DG. Materiel was overall very well presented and the CD-ROM was a great idea. The *Blue Thunder* exercise was a one of a kind experience. I believe the idea behind ASBC is great and I really enjoyed the course. Even though some of the subjects on the course were covered by our commissioning source, some things were not as clearly explained as it was on this course.
- It taught me things that I needed to know going into active duty. I didn't know all of the Air Fore planes, airpower doctrine, and had never met academy cadets prior to attending. This brought it all together. I liked the social interactions and getting to know other people like me and about the Air force way of life. We had an awesome flight commander who really facilitated our learning.
- I thought the course did a great job of articulating the different aspects of airpower and the methods used to prepare and employ that airpower. Overall, I thought the biggest strengths were through the lessons on the history and future of the Air Force, and where we fit into that plan.
- What the Air Force brings to the fight for my joint colleagues. In my opinion, this course MUST be maintained to instruct future Air Force officers about the warfighting capability of their service. Everyone has learned here. Also, it was great that we played Ultra Disc. That game is awesome!
- Seminar instruction was a lot more effective than the lectures. - ASBC gave me a better idea of where my job fits into the "big picture". - Learning about the JASOP and other aspects of running an air campaign was good in terms of people not focusing on their specific jobs, but on airmanship instead. - It was really good to work with people from other commissioning sources - a lot of my stereotypes were changed. - ASBC also helped make the transition from ROTC to active duty a little easier. I was able to talk to people and get advice and learn how things work before getting to my first duty station.
- Gave the lieutenants a good foundation of knowledge, and now they can build up. Also, this school allowed new lieutenants to learn from others mistakes and accomplishments. Finally, the school did succeed at showing that all positions are important in accomplishing the mission. The school was excellent and I now feel more confident as an Officer. Therefore, I thank you!

What are the weaknesses of the course?

- Lectures. It was nice to change up and go to the lecture room as a change. Not many lieutenants really ended up paying attention, so it didn't seem like the time used there was very effective. I can't say that about all lectures...only the majority of them.

- The auditorium!! That place is cold and some of the lectures were very long. Some lectures, in general, overlapped seemingly a bit too much. I understand the need for some redundancy, but some of it could be avoided.

- The course was strong but a lot of times the student attitude was poor. Maybe add in some time for more interactions during seminar or auditorium briefs to force the audience to be more involved. Also try to get the faculty more involved with the students with some time set to questions/answer time or "story telling".

- I only picked up about 20% of the material given in lectures. The large lecture hall just isn't conducive to learning. There should never be more than two lectures per day. In my flight there was no correlation between reading and studying and doing well on the test. All the test did was show who the good test takers in the flight were.

- Lectures in the auditorium were often repetitive and too long. In addition, the extreme air conditioning efforts made the environment uncomfortable. The personal fitness aspect of the course is not necessary. I believe it is already slated to be removed from the curriculum and I agree with that decision. Also, many lieutenants found out at the extreme last minute that they were coming here. This no doubt hurt morale somewhat. I realize this was not planned, but finding out in mid June that you were coming here was a surprise.

- Sometimes the reading was too much for a next day class. This can be solved if you, for example join two readings for the same lesson into a single one. Especially the ones on Israel and Vietnam. You may have two different readings for the same lesson, and both of them will be too similar, this discourages reading. I also think that there should be more sports activities and on-hands exercises like Blue Thunder.

- The greatest weakness in the course was the redundancy in some of the material, and you could just get by without reading. A lot of the lectures just reaffirmed the readings, therefore the readings just became pointless. The student should be required to read, but not have the readings spit back at him in the lecture, which he/she then falls asleep in.

- The speed of the course was set a little too high. It was way too slow for the people who already knew most of the material, but went to fast for the people who were unfamiliar with the material. I would have liked to have more of a round table discussion rather than continual instruction.

Analysis Summary

Figure 5.38 summarizes the five research questions that were analyzed in this chapter and also shows the results from the cognitive and affective analysis that were conducted. For the most part, the ASBC appears to have met the following goals:

- The course baselined all participants (regardless of commissioning source) to the same cognitive level and indicated by the test scores, and

- The treatment group increased its scores by a significant amount relative to the control group

In this regard, the course was a success: the students graduated with more cognitive knowledge about the Air Force, its history, and technical information regarding airpower doctrine and operations. Likewise, students appear to have enjoyed the course and the hands-on experience of participating in Blue Thunder. Some of the qualitative comments even highlighted the benefit of bringing commissioning sources together to learn.

However, there were also some results that were not as positive as had been originally anticipated. The Blue Thunder exercise did not produce the type of results that were expected: student scores were lower afterwards than prior to the exercise. In many ways, the Blue Thunder exercise may have detracted from the cognitive test due to the fact that the students who took the cognitive post-test after Blue Thunder did not have the same immediacy of the 'book' material as did those participants who took the test before the exercise. However, the benefits of the exercise must also be emphasized: 1) the students enjoyed it and 2) it was probably the one element of the curriculum that best addressed the affective learning environment. Given these two extremely important benefits, it is necessary for future versions of the ASBC concept to consider the use of a hands-on exercise like the one presented. The exercise both fulfilled the CORONA visionaries' expectations for a hands-on environment and it approached a more TBS-like curriculum. More research needs to be done on the impact of Blue Thunder to determine whether or not it should be included in future versions of the course.

Likewise, affective outcomes associated with the course did not show the type of positive trends that were originally expected. The results of the analysis shown in this chapter indicated that the treatment groups' scores generally decreased. This indicated that the participants left the course, for the most part, more pessimistic about qualitative issues that are important to the Air Force, than when they arrived at the course. The control group showed similar decreases as well, but they were slightly lower in magnitude, on average, than the decreases in the treatment group scores. Some of this decrease may be attributed to the youthful exuberance of the new officers that may have existed upon entering the active duty—essentially, the experience of a couple months of active duty provided them with a much more complex view of the organization

than what they may have previously expected. However, this reason does not explain why the treatment group decreased more than the control group.

The bottom line to answering this question is that the course appears to have been successful on the cognitive front, but did not achieve the type of goals that CORONA expected on the affective side. One question that immediately arises, however, is whether or not these type and magnitude of results make sense given the way that the course was designed. Relative to the answer provided in the previous section, the conclusion is that they do. As highlighted in Chapter 3, the curriculum was primarily focused upon academic material in an academic setting. The ASBC never approached the difficulty or challenge of a TBS related curriculum and did not challenge the participants in a way that would have been likely to foster attitudinal changes in a structured manner. Likewise, it was virtually impossible for ASBC to achieve the type of affective outcomes that may have been expected without a well-defined plan for how to achieve change. Simply stated, they hoped for change, but didn't actively plan for it.

Figure 5.38 Expected Outcomes and Actual Results for Each of the Research Questions

Question	Expected Outcome (Hypothesis)	Cognitive Outcome	Affective Outcome
1. Are there pre-test differences among the commissioning sources?	Expected that the commissioning sources would have different cognitive and affective scores due to the fact that each commissioning programs provides a different set of skills and experience.	Analysis showed that statistically significant differences existed among the commissioning sources--specifically Academy graduates knew more.	Analysis showed that statistically significant differences existed among the commissioning sources for 5 of the 7 categories.
2. Are there post-test differences among the commissioning sources?	Expected that ASBC would provide information such that there would be negligible difference between affective and cognitive material; essentially ASBC would raise participants' knowledge to a similar level.	Post-test scores were not statistically different from one another; treatment group participants left ASBC with the same level of cognitive knowledge.	The post-test showed that 2 of the 7 categories remained statistically significant which implies that the commissioning sources had different attitudes.
3. Is there a difference in post-test scores of students who were tested at the conclusion of *Blue Thunder* relative to those who took it before the exercise?	Expected that there would be a difference in outcomes--specifically, the *Blue Thunder* exercise was intended to reinforce theoretical material learned during the first part of the course.	Cognitive post-test scores decreased as a result of Blue Thunder.	Not affectively tested. However, ASBC treatment group participants appeared to enjoy the exercise and rated it highly on the exercise survey and through their qualitative comments
4. Does ASBC have an impact on participants?	Expected that ASBC would have statistically significant impact both cognitively and affectively in a positive manner. Specifically, expected that cognitive scores would be higher and that affective evaluations from the students would be more optimistically scored.	The cognitive test scores increased by 88% as a result of taking the ASBC. These results were found to be statistically significant relative to the pre-test scores.	Affective survey scores decreased by roughly 2.8% which indicated that participants left the course less optimistic than when the arrived.
5. Does attending ASBC provide more knowledge than not attending the course?	Expected that ASBC would provide more knowledge and change attitudes in a more positive manner than not attending the course.	The treatment group increased their cognitive scores while the control group's aggregate mean score decreased. The ASBC was value added in a cognitive sense.	Both the treatment and the control groups' affective survey scores decreased by amount that was not found to be statistically different.

Policy Recommendations to Enhance the ASBC Concept

The analysis and presentation of results to this point in the research have focused upon the ASBC. This section highlights specific recommendations that Air Force policymakers should consider in response to these issues to ensure that the ASBC is a solid program that accomplishes the vision that was established in 1996. The next chapter, Chapter 6, will discuss how the ASBC impacted aspects of organizational change that the Air Force desired—this discussion will be followed by a list of policy recommendations that pertain to a broader context of change. Many of the recommendations that are focused on enhancing the ASBC could be implemented within a fairly short timeframe (less than a year). The recommendations that involve broader organizational change issues may take substantively longer. At the end of this section, Figure 5.39 shows a summary of the recommendations to enhance the ASBC concept, the issues they address, potential cost of implementation, and an expected timeframe for implementation. The numbering scheme used with this section is not intended to match-up with any of the other observations in this chapter.

1. *The ASBC should be redesigned to produce more affective outcomes that are directly related to the CORONA tasking from 1996.*

If the ASBC concept is fully implemented in the future, it should be redesigned to incorporate more affective activities for the participants. The course should include activities that programs like TBS currently include: a focus upon more rigorous physical conditioning, development of more socialization opportunities, and an expansion of more hands-on exercises like Blue Thunder. Examination of AF/LRP's vision from 1996 indicates that these types of activities are considered to be very important to the course's ability to fulfill the vision for creating change. To accomplish the implementation of such programs, ASBC staff will be required to travel to Quantico and view the TBS program, review the technical aspects of creating affective change, and invite both military and civilian scholars to assist in creating an environment for affective change.

2. The Air University should conduct a cost-benefit analysis to determine which material should be included (or excluded) from the course.

As demonstrated in this dissertation, the Air Force never conducted the type of robust analyses required to support the decision to make the ASBC a 7-week course from its original vision as a 16-week program. Recent discussions within the Air University and ASBC have even discussed the possibility of decreasing the length of ASBC from 7 weeks to 4 during its next iteration. Instead of consciously trading-off activities with cost, AU based its decision strictly upon cost ceilings without contrasting the types (and amount) of benefits that would be lost. Review of the curriculum indicated that the affective activities appeared to have taken the most significant cuts even though the CORONA vision implicitly focused upon the affective area as a key to the success of the course. If the course is cut to 4 weeks, it is highly likely that the affective domain will be minimized further. The Air Force should be very careful with its propensity to cut the program to such an extent that the course provides minimal (or even no) value.

To conduct the analysis, the Air Force should consider both quantitative and qualitative variables: cost and throughput of sending participants through varied length courses, impact of scheduling with respect to follow-on assignment opportunities, and the need for training new lieutenants as soon as possible after their commissioning. The Air Force must also consider the impacts of not teaching certain types of activities during ASBC and passing along responsibility for other areas of instruction to either the commissioning sources or to other PME programs.

3. The Air Force should construct a financial analysis to determine the best site location for the ASBC.

The discussion presented under Recommendation 2 highlighted the fact that the Air University made cuts to the length of the ASBC based upon cost constraints. One of the most significant cost issues that is driving this issues (and pointed in out in Chapter 3) is that the Air University wants to locate the ASBC at Maxwell AFB. Presentations that were made in 1997 to Air Force leadership from the Air University showed policy options that restricted the siting of the

ASBC at Maxwell. Consideration was never given to locating ASBC at another base or training location. As presented in Chapter 3, much of the cost associated with ASBC would be to construct new capital facilities at Maxwell to house the students. Given the type of infrastructure that exists at bases like Lackland AFB, or even the Air Force Academy during less busy times of the year, it's not clear why the decisionmakers didn't consider other location options. The best argument for locating the ASBC at Maxwell is based upon the history of Air University as the home for PME courses. However, given the significant capital constraints at the base and the potential need to build more facilities to run an ASBC, it's not clear that the benefits of locating ASBC at Maxwell would necessarily outweigh the costs.

The type of analysis recommended here, in conjunction with the cost-benefit analysis recommended under #2, would provide a more robust solution for Air Force policymakers in considering how long of a course (and how much) they can afford. An emphasis is also added that the Air Force, and not the Air University, should be responsible for determining the most optimal location for ASBC. The reason that this type of analysis should be done at the Air Staff level is that AU or its parent, the Air Education and Training Command (AETC), may not consider other siting options like the Air Force Academy or facilities that are outside their scope of influence.

4. The ASBC should coordinate with the commissioning sources to: 1) decrease repetitiveness of instruction and 2) coordinate responsibilities for teaching junior officer PME material.

Although ASBC staff did review the curriculum of the commissioning sources prior to implementing the ASBC in the spring of 1998, it wasn't clear how well the information was used in constructing the course curriculum. In one respect, the ASBC staff had a challenging job because it was trying to develop a PME curriculum for participants with varying backgrounds: for example, the Academy graduates had the most knowledge and technical skills relative to their non-Academy counterparts. The ASBC staff made a decision to teach to the 'lowest common denominator' of knowledge of the commissioning sources. This philosophy implied that the

course material is developed and taught so that any officer from any commissioning source would have exposure. Given the very nature of this decision, it was highly probable that the Academy graduates would see material for the second time in a relatively short timeframe. The implication is that bored second lieutenants will not gain much by attending the ASBC—the material will be rehash of previously learned concepts.

Another important dynamic is the almost continuous changes and adaptations that the commissions sources make to meet Air Force needs. Although it is recognized that there is likely to be some overlap of ASBC material and what is taught at the commissioning sources because of the reasons presented in the last paragraph, it is still necessary that ASBC proactively coordinate with the commissioning sources in order to ensure that the repetitiveness is kept to a minimum. Coordination should include regular review and meetings among the commissioning sources and ASBC staff to determine curriculum focus and content as well as future changes. Likewise, it is possible that ASBC and the commissioning programs could come to an agreement with respect to who should teach what. This type of recommendation should also be considered as part of the Recommendation #2 that discussed the need for a cost-benefit analysis to assess the length and structure of ASBC. These type of linkages are important for ensuring that the Air Force PME is conducted in both an effective and efficient manner at the newly commissioned/junior officer level.

Figure 5.39 Policy recommendations focused upon enhancing the ASBC concept

Policy Recommendation	Issues Addressed by Recommendation	Timeline for Implementation	Potential Cost to Implement
1. The ASBC should be redesigned to produce more affective outcomes that are directly related to the CORONA tasking from 1996	• Lack of affective curriculum and activities in the current ASBC. • Lowering of affective scores from the pre- to the post-test for the treatment group. • No review of the TBS program. • No participation by outside curriculum experts.	ASBC should immediately conduct research to change the course prior to implementation in FY00.	Cost would include activities such as travel to TBS, invitation of outside experts to Maxwell AFB, and time to redesign course.
2. The Air University should conduct a cost-benefit analysis to determine which material should be included (or excluded) from the course.	• The decision to decrease course length from 16 to 7 weeks was based solely upon cost without consideration of the type (and amount) of instruction lost. • Recent discussions have focused on decreasing the course length again, this time to 4 weeks. Again, the decisions have been based solely upon cost without considering cost-benefit trade-offs.	Air University in conjunction with ASBC should develop an analysis that considers the type of activities that must be taught per the CORONA 1996 direction. Topics should be prioritized, in order of importance, and should be traded off with respect to cost. This type of analysis could be accomplished within the FY99–00 timeframe.	The cost to implement this type of study would involve personnel and time costs, plus resources within Air University.
3. The Air Force should construct a financial analysis to consider the best site location for the ASBC.	• The decision to decrease the course length from 16 to 7 weeks was based upon cost and capital facility constraints at Maxwell • No other bases or sites, besides Maxwell AFB, were considered for	Analysis could be accomplished within the next year. This work should be conducted by the Air Staff in coordination with AETC, AU, and the ASBC and consider a range of site locations where capital facilities may be available.	The cost to implement this type of analysis would involve personnel and time costs.

Policy Recommendation	Issues Addressed by Recommendation	Timeline for Implementation	Potential Cost to Implement
	housing the ASBC		
4. The ASBC should coordinate with the commissioning sources to a) decrease repetition of instruction and b) coordinate responsibilities for teaching PME type material.	• Repetitiveness of material that is taught at both ASBC and the commissioning sources. • Lack of coordination between ASBC and commissioning sources for the type (and depth) of material that is being taught.	Discussions between ASBC and the commissioning sources should commence immediately and should focus upon curriculum content to decrease repetition or change the curriculum.	Minimal cost to implement this recommendation--some travel associated with meeting with representatives from the commissioning sources. Potentially more-significant costs associated with restructuring programs.

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Chapter

6

The ASBC and Organizational Change in the Air Force

The first five chapters of this dissertation explored the ASBC in greater depth with respect to both the efficacy of the course and the manner in which it was designed. This chapter will expand into broader areas of organizational change and the role that the ASBC could play in facilitating such change as the Air Force enters the 21st Century. Accordingly, this chapter is focused upon answering four questions that will shed light on the organizational aspects of this work:

- Why did the Air Force believe that change is necessary at this time?

- Why was a training course, the ASBC, chosen as a vehicle to institute this change?

- How will ASBC fit into the current model of officer education and professional military development and what are the ramifications?

- What other institutional changes may be required to support the knowledge that is gained from the ASBC?

Similar to the structure of the previous chapter, this chapter will conclude by stating policy recommendations that the Air Force should implement to ensure an effective change.

Why did the Air Force Believe that Change is Necessary at this Time?

Review of the landscape during the most recent past indicates that there are two answers to this question: 1) the Air Force is faced with a set of different (and uncertain) exogenous factors than it has seen during the past five decades and 2) a concern that the service has lost its ideological foundation.

Different Climates that will Lead to...Different Futures

In her 1983 book, *The Change Masters*, Rosabeth Kanter describes two types of forces for change, or change drivers: Force A, 'Departures from Tradition,' and Force B, 'Crisis or Galvanizing Event.'[119] Whereas the first force consists of deviations from normal operations that occur on a relatively small scale as individual accidentally or intentionally change how things are done, the latter consists of larger-scale forces that require an immediate response from the enterprise. Failure to immediately respond could mean the downfall of the organization. This type of change driver typically comes from outside the enterprise's normal operations, although it may be a situation or event happening inside or outside the enterprise's boundaries. As Kanter points out, although it is possible for departures from tradition to accumulate and create the need for a managed change project, typically it is the larger-scale crises or change events that drives the need for a formal strategy.

As highlighted in the introductory chapter of this dissertation, the Air Force has entered a new phase in its life cycle as an organization—one that could be accurately categorized as a "galvanizing event" using Kanter's term. Relative to the Cold War era when the Air Force was focused upon fighting the Soviet Union and using nuclear assets, the 21st Century is much less certain about future adversaries and warfighting conditions. The most recent case of the Air Force's involvement in Kosovo clearly underscores this point. This uncertainty is presenting novel challenges to the vision, goals, roles, and missions, and focus of the Air Force and will require that military leaders confront a myriad of paradigm shifts that are likely to occur in the next few decades (and which are unpredictable from today's vantage point). The change from Cold War to the present has definitely been the catalyst which has caused the Air Force to rethink it purpose.

In order to successfully confront such uncertainties, the Air Force has been required to adapt and change so that it can meet future threats with the tenacity and success that it has done for the past five decades. Along these lines and to their credit as effective strategic thinkers,

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[119] Kanter, Rosabeth Moss, *The Change Masters*, Simon and Schuster, 1983: pp. 290-294.

contemporary military and civilian leaders of the armed services realize that change is necessary for the United States to achieve its national security objectives. Accordingly, they have already undertaken specific activities, plans, and programs to address future challenges. As the first two chapters of this dissertation pointed out, change has already taken the form of new technologies and organizational realignment and will most likely also require new derivatives of weapons and aircraft, tactics, and training to ensure that the Air Force is the best in the world. Military and political leaders realize that anything less than providing the best training and systems for the nation's warfighters would be substandard and could potentially compromise the national security of the United States. In simplest of terms, Air Force leaderships feels that if it doesn't continue to change to meet its exogenous environment, then it could potentially lose the next major conflict.

The Need for Regaining a Lost Ideology in a Smaller Air Force

Although the previous discussion explains some of the reason why the Air Force has decided to change its organizational structure and focus, it does not adequately explain the whole picture. In some regards, Air Force leadership of the 1990s used the critical events of the late 1980s as a reason to accomplish an internal examination of principles and culture. Air Force leadership is greatly concerned about ensuring that its people understand the culture, core values, and ethics of military service and believe that failure to understand the basic tenets of military service could be detrimental to how the Air Force technically (and operationally) implements its craft.[120]

As discussed in the first and second chapters of this dissertation, there has been a relatively long history of Air Force leaders who have felt that the organization's personnel have not embraced such values. However, in many ways, the Air Force could still operate effectively due to its sheer size—there were enough 'believers' to keep the principles functioning. Because of the drawdown of the service to a much smaller group of individuals, there has been a threat to the critical mass needed to foster such ideals. The smaller cadre of people will not only have to

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[120] "Building a Better Force," *Air Force Times*, March 3, 1997: p. 29.

be operationally more efficient than their counterparts twenty years ago, but they will also be required to be more attuned to the service culture and ethos—failure to do so could mean a breakdown of the structure of the organization.

Why was a training course, the ASBC, chosen as a vehicle to institute this change?

Of all of the possible ways in which the Air Force could infuse change, why did they choose to interject training at the lowest level by use of the ASBC? From an outsider's perspective, perhaps no wiser investment could be made to ensure the future success of the Air Force than to conduct proper training and education of future leaders in how to carry-out their commission. As Tichy and Cohen point out, winning organizations rely upon good leaders to set a direction for the future and to execute the mission properly.[123] Air Force leaders believed that by training the future leaders of the service, the organization would continue to adapt and excel. There is another important reason for why ASBC was chosen: that a training program was needed to unify the disparate commissioning sources and address existing institutional problems without toppling the existing infrastructure.

Disparate Commissioning Sources and other Institutional Problems

> "...there is a more basic, fundamental reason for ASBC, and that is to strengthen the culture of the Air Force...Unfortunately, we strayed away from the fundamental principles of the value of airpower taught by early pioneers such as Billy Mitchell, Ira Eaker, Claire Chennault, and Haywood Hansell. Ask any Marine Corps member what he or she is and the response will resound loud and clear – I am a Marine; present the same question to an Air Force member and the typical response will be, I'm a pilot, personnel officer, communications officer, space operations officer, etc. You see, we have become stovepiped, a force represented by many specialties, and we haven't been talking or thinking of the inherent values and factors that tie us together as a coherent force.

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[121] AF/LRP *White Paper* from July 1996 and CORONA briefings, Fall 1996

[122] At Maxwell AFB, all of the Professional Military Education (PME) schools: Squadron Officer School, Air Command and Staff College, and the Air War College are located around Chenault circle drive.

[123] Tichy, Noel M. and Eli Cohen, *The Leadership Engine: How Winning Companies Build Leaders at Every Level,* Harper Business, 1997.

> Over the past decade we lost the "bubble," on what it means to be an airman, and ASBC was created to regain that by providing an experience common to all airmen. ASBC will bring all of our newly commissioned officers together and create a common base of understanding of how all the elements of our force fit together. This course was designed to provide you with a common frame of reference for understanding and employing aerospace forces. It will help you move away from being Air Force specialists and towards warfighting strategists."[124]

As evidenced by General Newton's quote, Air Force leaders have spoken of the need to fix issues like 'stovepiping' and 'specialties'; however, they have never traced these problems to one of the primary sources: a lack of standardization among the officer commissioning sources. The absence of a standardization of knowledge (and also opportunity) at the junior officer level has been a problem facing the Air Force for some time now and one reason why there have been problems in the organization. Although the history of the three commissioning sources will not be dwelled upon here, suffice it to say that the system of three separate systems has produced a two-tiered system of officers: Academy graduates and non-Academy graduates. In fact, review of the seminal legislation that established the Air Force Academy actually marketed the institution in such a way.[125]

Over the past 40 years, different types of opportunities have been afforded to officers based upon their source of commissioning: for example, Academy graduates have typically had a significantly better chance of going to flight training than have candidates from the other commissioning sources. There have been other benefits as well including increased tenure in the organization by the issuance of regular commissions to Academy graduates. Again, the system has been purposefully designed this way. It is no wonder that there has been a lack of cohesiveness in the service among officers—the way that the system has been designed purposefully fosters divisiveness from the very beginning. Likewise, there is no incentive for the system to change—Air Force leaders are unlikely to change a system that is: 1) steeped in history going back to administration of Thomas Jefferson; 2) highly coveted by congressional members; and 3) something that they grew up and got promoted under. Any change to the existing structure would require a significant catalyst—one probably of the magnitude of

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[124] General Lloyd Newton, "Opening Address to the ASBC," Maxwell AFB, AL, July 6, 1998.

Congressional direction. In this regard, ASBC was chosen over other methods because it is viewed as a regulator to adjust the incoming officer flow without changing the existing infrastructure.

How will ASBC fit into the current model of officer education and professional military development and what are the ramifications?

The answer to this question is clear in some regards and less transparent in others. Currently, the Air Force is marketing the ASBC as a course that will provide 'foundational knowledge' that is critical to an officer's career—thus, the course has been functionally located at the beginning of the career development process. Review of the course in greater detail, however, raises several concerns in the context of organizational change: 1) attendance at ASBC occurs immediately after commissioning and appears to be redundant; 2) some of the course material was not directly focused on what a Lieutenant would need to know; and 3) there are no plans in place for graduates to transition into warrior-related jobs upon leaving ASBC.

Immediacy of Attendance

In one respect, the immediacy of attendance at ASBC after commissioning is needed to ensure that all officers have a common bond at an early point in their careers—this fulfills the CORONA tasking and vision for the timing of attendance. The downside to this argument is that the course will be redundant (albeit at different levels) in many ways: for example, Academy graduates will be exposed to similar material for the second and even 3rd iteration with a time period of two years. Instead of ASBC, one could make an argument that the technical knowledge gained at ASBC could have just as easily (and probably more cost effectively as well) been taught at the commissioning source level. The only counter to this argument is that ASBC is able to be provide a 'common bond' among the Lieutenants—something which the disparate commissioning source processes are note able to do. A fix to this dilemma could be accomplished by one of two methods: 1) for the ASBC curriculum developers to ensure that

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[125] Thirtle, Michael R., "Air Force Officer Accessions: A Brief Review," P-8001-RGS, 1997.

there is a strong linkage between ASBC and commissioning sources to ensure that the repetitiveness of the material is kept to a minimum or 2) if the commissioning source structure was changed to a model which promoted bonding in a different manner.

Ramifications to the Officer Commissioning Sources

For example, instead of creating an ASBC, perhaps a better method for integrating individuals and indoctrinating them in a similar ideology would be for the Air Force to have one program for commissioning officers. Such a model would directly address the concerns that exist by providing a common, standardized curriculum of instruction for ALL officers. Such a program would replace the three separate commissioning sources. Needless to say, this idea would be a significant paradigm shift to the current (and past) method of how officers have been commissioned in the Air Force. Research of the historical record at ASBC indicated that this was not a new idea.[126]

In March 1997, Colonel Randall Wooten wrote a letter to the U.S. Air Force Chief of Staff regarding the development of the Air and Space Basic Course.[127] Colonel Wooten is a retired Air Force officer who served for 28 years on active duty. At the time that he wrote the letter, he was on the senior staff of Air University and had been intimately involved with the early development of the ASBC. In his letter, he stated that he felt that the Air and Space Basic Course had been developed with a specific, narrow purpose: namely, to create a separate course. He stated that his suggestions for taking a broader look at the commissioning and training issue did not make it to the Chief of Staff because of the methodology used to 'flesh-out' the ASBC concept. Specifically, he and his staff were tasked to provide data on a methodology, and not to look at alternatives to accomplishing the objectives that CORONA 1996 had established. He stated that his ideas that were "too far outside the box" and "gored too many oxen." Consequently, he had

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[126] Other citations that have issued similar proposals include the following: Colonel Denis J. Kiely, "Air the Academies Worth It?" *Naval Proceedings*, June 1991: pp. 36-41; Scott Shuger, "The Case Against the Military Academies," *The Washington Monthly*, October 1994: pp. 20-22; Major Kieth Hutcheson, "It's Time to Close the Doors in Colorado," *Armed Forces Journal International*, September 1994: pp. 32-37; Major Constance Davis, "The Dissolution of the United States Air Force Academy: It is Time?" Air Command and Staff College, Maxwell AFB, AL, March 1997.

[127] Letter from Colonel Randall Wooten to General Ronald Fogleman, March 13, 1997.

no vehicle to get visibility at the level of senior policymakers: simply stated, his ideas were too controversial.

Colonel Wooten's idea was focused upon restructuring the commissioning source structure such that the Air Force Academy would be the sole location for commissioning new officers while simultaneously incorporating an ASBC focused approach and timeline for training. The Air Force never considered his idea; probably, because of some of the reasons previously provided. In any case, the recommendation that results from this analysis is that the Air Force should reconsider its approach toward creating a novel course in favor of other policy options like changing the commissioning-source structure.

High-Level Knowledge

Even though some of the material may have been review, another large portion of the curriculum was focused on topics that could be labeled as 'too high-level' for what a lieutenant would need to know for carrying out his/her tasks. For example, does a brand new second Lieutenant need to know intricate details of the entire air campaign planning process? Or should the lieutenant be more focused on how to work with enlisted personnel, learning how to lead and give orders, and how to carry oneself as an officer? ASBC focused on the former question and subsequently addressed topics that many officers do not actually encounter until they are senior officers. In comparison to what students receive at ASBC, the TBS program trains lieutenants in how to conduct performance appraisals, how to accomplish other administrative activities, as well as what they should know as a young officer to carry out their duties. The TBS curriculum is better focused on core knowledge than what ASBC provides.

Ramifications to Officer Professional Military Education

Implementation of ASBC should have definite impacts upon the other PME courses as well. The word 'should' is used here because the Air Force has not developed a gameplan for how the PME courses support one another. Specifically, the Air Force has not answered the question of what contemporary officers should know, how deeply they should understand it, and when it should be taught to them. Like the commissioning source question highlighted in the

previous section, ASBC's existence raises many questions with respect to when and how training

should occur. It also raises questions with respect to whether or not the type of material that

ASBC teaches is congruent and supported by the other PME courses. To date, the USAF has

not established an educational continuum that would capture main educational and training

milestones that an officer should be exposed to. One method for determining the continuum

would be to assess what senior officers must know in the future to carry-out their responsibilities

and work, chronologically, backwards to determine how education and training today can support

the future needs. Specific linkages should be developed such that an Air Force officer

progresses throughout a career by building upon previous training. The ASBC program could

then be logically linked to the continuum to support knowledge and development.

Follow-On Assignment in a Warrior Role

One of the explicit expectations of the CORONA tasking in 1996 was that graduates of

ASBC would transition directly into a warrior-related job (meaning an operations focus) upon

finishing the course. The purpose for this transition was twofold: 1) to baseline all officers in a

operations-related discipline and 2) to reinforce knowledge gained from the ASBC. Both of these

reasons are justified for implementing such a concept; however, the Air Force has not formalized

this program yet and it's not clear if it will be able to fulfill this tasking. This concept is very

appealing for the reasons specified above, but it also addresses one of the significant criticisms

that Air Force leaders have with the current organizational culture: officers are stovepiped into

specific career tracks at an early stage in their careers and they tend to stay in that mode as they

progress through the ranks. Like other problems highlighted in this dissertation, the existing

career development processes have been a major cause of this dilemma. Specifically, Air Force

officers are promoted on their technical strengths and their ability to perform specific functions in

their career specialty. For example, an officer with an acquisition specialty has a narrowly

defined career track that includes specific activities specifically within the business side of the Air

Force—rarely would one venture outside of the prescribed career path to accomplish unrelated

activities. Transitioning officers into an operational job as their first assignment would require that

the personnel systems allow for a broader growth and experience than what is currently acceptable today.

What other institutional changes may be required to support the knowledge that is gained from the ASBC?

Chapter 1 highlighted the type of activities that would be required, in a training context to reinforce the material that is learned at the ASBC. Examples include both pre and post training interventions. For example, prior to attending the ASBC, participants should be involved with discussions to ensure that they understand the purpose of the training and why the training will be beneficial. They should also understand the Air Force's expectations for the training and how the ASBC fits into the officer PME process. At the conclusion of the training, supervisors and mentors should engage the lieutenants in applying their knowledge on the job to ensure that they do not forget what they learned at ASBC. This is not an easy task to accomplish, but for the organization to benefit from ASBC, it is necessarily important. As discussed above, there are several PME issues that must be addressed to ensure that the entire training life cycle provides the right type of knowledge to officers throughout their career. Further development of ASBC should not be done in a vacuum, but instead should be created in concert of the other programs.

Aside from changes to the educational programs (PME and commissioning) cited above, there are many other activities that would need to be considered to support the knowledge gained by the ASBC participants. This list is by no means considered to be exhaustive, but instead is provided as examples for the Air Force to consider. Other initiatives that would be required to support the ASBC concept include:

- Reexamination of the types of opportunities available to officers to ensure that career stovepiping is minimized.
- Training of all Air Force personnel in the same vein as the material that the ASBC participants received.
- Review and coordination of Air Force organizational change activities to ensure that they support one another.
- A focus upon instituting new policies to support the ASBC concept.

Policy Recommendations to Foster Organizational Change

Relative to the main purpose of Chapter 5 which was focused on improving the ASBC, the purpose of this chapter was to highlight issues that will affect the Air Force in the broader context of organizational change. The remainder of this chapter is dedicated to providing specific policy recommendations to supplement and support ASBC. At the end of this section, Figure 6.1 summarizes these recommendations, the issues they address, potential cost of implementation, and an expected timeframe for implementation.

1. The Air Force should develop stronger linkages between ASBC and other PME programs.

Aside from working with the commissioning sources, ASBC should also be directly involved with the curriculum development that occurs within the other Air Force PME programs. Specifically, the ASBC staff should interface with faculty at the Squadron Officer School, the Air Command and Staff College, the School of Advanced Airpower Studies, the Air War College, the Air University's College of Aerospace Doctrine, Research, and Education (CADRE), and the enlisted service schools. ASBC staff should understand the type of activities that are being taught at other PME courses so that it can: 1) support such programs and 2) provide the type of foundation that is necessary for officers entering the future PME courses. At the very least, ASBC should be connected with the SOS program to determine what type of training junior officers should receive. Similar to the emphasis in Recommendation #4 in Chapter 5, linkages should be established to avert as much repetitiveness as possible. A strong linkage between SOS and ASBC could even be cast as a program that is strictly concerned with training and education throughout the continuum of a company grade officer's tenure.

2. In conjunction with Recommendation #1, AU should develop expectations for what type and depth of PME should be received at various levels of the officer career development process.

In developing a more thorough continuum of education, the Air University, in conjunction with ASBC and the other PME schools, should define the type and depth of information that officers should be expected to comprehend and apply at various stages throughout their career. AU should take the lead in facilitating joint meetings among the schools to detail what officers should know and, consequently, what the PME schools should be responsible for teaching. When ASBC staff originally developed the ASBC curriculum, they scanned the existing PME environment to determine what the other PME schools were teaching. Aside from discovering what type of technical material was being taught, they also realized that the schools did not have close linkages with one another, nor were there specific expectations of what the schools should teach. Currently, no such integrative document exists which describes what officers should know and how the PME programs will implement teaching to facilitate understanding. Development of such a document will also benefit ASBC because it will be able to compare what it is in the process of developing relative to expectations in the continuum of education.

3. Training follow-up should be accomplished with all of the ASBC participants.

After the lieutenants finished the ASBC test course in summer 1998 there was no follow-up either by ASBC or AU to determine how well the participants were applying the knowledge that they had learned during their seven weeks at Maxwell AFB. This is an impact that should be studied to determine the long-term effects of the ASBC. Likewise, neither AU nor ASBC had developed a specific plan for how the participants' supervisors would follow-up with the students after returning from training. As indicated in Chapter 1, it is necessary to formulate post-training interventions (reinforcement) to ensure that the participants have not forgotten what they learned during training. There are various methods for providing such post-training interventions:

discussions with colleagues or supervisors, refresher training on what was learned, or even supplemental exercises or reading materials. The important aspect of this recommendation is that the Air Force must proactively follow-up with the participants to ensure that the knowledge gained during ASBC is not lost. This would also be an ideal time to test the participants again to observe if any changes existed from the time that they graduated from ASBC.

Given that the junior officers who attend ASBC will be supervised by civilians and military officers who did not attend the training, there is a high probability that the ASBC graduates will not get the type of reinforcement that they would need to keep their skills proficient. This recommendation could involve significant planning and cost due to the myriad of ways that the reinforcement could be approached; in any case, the Air Force must consider the type of costs and benefits associated with this recommendation in order to implement the most efficient and effective mix of reinforcement techniques.

4. The Air Force should study the possibility of sending ASBC graduates directly to operational jobs as their first assignment.

This recommendation would require significant changes to the current personnel processes and would impact the Air Force in many ways. Two of the key impacts include the following: 1) personnel allocation methods would have to be changed and 2) career development paths would need to be reexamined to fit a model that is inclusive of operational experience at an early stage in career development. For the reasons highlighted earlier, this recommendation would require a long-term horizon for implementation.

5. In an even broader sense, ASBC should be examined in the context of changing the entire commissioning source structure.

Of all of the recommendations listed in this chapter, perhaps no other is as controversial as this one. As previously discussed, one significant benefit of ASBC is that it brings together the products of three disparate commissioning source programs. Air Force leadership expected that

the ASBC would not only benefit participants in terms of knowledge, but in a more macro sense, it was intended to baseline all officers at a similar level of understanding. The course achieved both goals. As Colonel Wooten pointed out in his 1997 memo to General Fogleman, however, aside from creating a new PME course (ASBC) there were no other options considered by Air Force leadership to address the deficiencies that CORONA identified in 1996. One option would be to change the process for officer commissioning by restructuring, as Wooten stated, into a single source.

Although this discussion is outside of the scope of this dissertation (one could write an entire dissertation focused just on this issue), it is necessary that the Air Force take a step back and creatively approach the problem with other solutions than the one that is currently being implemented. Even though the ASBC concept is needed to facilitate change in the Air Force, it's not clear whether or not a separate ASBC school is necessarily the right answer. Similar to the other recommendations presented in this section, the Air Force must creatively think through options that can be implemented, conduct cost-benefit analyses on the options, and implement the choice that is the most efficient and effective. This process could require significant time, resources, and political influence to change; however, it could be to the long-term benefit of the Air Force. Figure 6.1 summarizes these five policy recommendations, their respective underlying issues, and a projection on the time and cost required to implement them.

Figure 6.1 Policy Recommendations Focused upon Organizational Change Issues

Policy Recommendation	Issues Addressed by Recommendation	Timeline for Implementation	Potential Cost to Implement
1. The Air Force should develop stronger linkages of ASBC to its other PME programs.	• PME courses are not well linked to support one another–especially at the SOS-ASBC level of junior-officer education	Recommendation can be implemented in the near to mid-term (1–3 years). Specific emphasis should be placed upon relationships between ASBC and SOS, given their common focus of junior-officer education. The linkage should be expanded to include all of the courses: ASBC, SOS, ACSC, and AWC, as well as the enlisted PME programs.	Minimal cost to implement, given that the recommendation deals with coordination and communication among different organizations at Maxwell AFB. There are possible cost ramifications if future changes are made to the PME schools' curriculums; however, it is impossible to speculate what types of changes may be instituted.
2. In coordination with #1, AU should develop expectations for what type/depth of PME should be received at various levels of the officer career-development process.	• ASBC staff were not given guidance with respect to what the newly commissioned officers should be taught • There are minimal linkages between ASBC and the other PME courses • AU has not provided any policy on a well-developed plan for determining what officers should know throughout their careers, when such information should be known, or which PME course is the most appropriate to teach it	This recommendation should be developed in the near to mid-term timeframe (1–3 years). Representatives from all of the PME schools should be involved in the exercise; per Recommendation #3, the commissioning sources should also be part of the working group to ensure that the entire officer career-development life cycle is well-understood and supported by all facets of the process.	Cost would be based upon the time and travel of participants to discuss activities. Likewise, there would be some cost associated with making changes to the existing curriculums at the PME courses and the commissioning programs.
3. Training follow-up should be accomplished with all of the ASBC participants	• There is no plan for follow-up with participants after they graduate from ASBC.	This recommendation could be implemented within the near to mid-term timeframe and would involve a creative approach to reminding the ASBC graduates of their experience at Maxwell.	Costs could be fairly minimal or even much greater, depending on the type and depth of reinforcement. Dependent upon which method(s) the Air Force chooses, costs could vary considerably.
4. The Air Force should study the possibility of sending ASBC graduates to operational jobs as their first assignment	• CORONA 1996 guidance specifically identified this as a follow-on activity after ASBC that has not been studied or implemented by the USAF • Officers are stovepiped in their career tracks from an early stage and tend not to explore outside of their narrowly defined development path	This recommendation could be implemented in a mid- to long-term plan. There are significant barriers to implementation, including the existing personnel structure, the career-development process, and the promotion system. All of these would need to be changed to support the concept.	Cost to study the concept would be incurred up-front. If the recommendation is accepted, it is likely that there will be significant costs to implement a change to the various processes that would be affected.

	• Many officers have no operational experience and do not appreciate operational activities	
5. In an even broader sense, ASBC should be examined in the context of changing the entire commissioning source structure.	• There are other alternatives to ASBC that could answer the same questions that CORONA posed in 1996	This is a mid- to long-term fix that would require significant time to study and make appropriate recommendations on.	The cost associated with this recommendation would involve significant personnel resources and time to implement, including capital investments and a restructuring of the entire officer-accession process.

Chapter

7

Conclusions

This dissertation began with a metaphor for change that described the tension between a captain and a lighthouse. In the story, the captain realized that his frame of reference was not exactly what he had thought it to be and eventually (after great consternation), he learned the lesson that the simultaneous presence of water and light do not necessarily equate to another ship sailing the ocean. Without the persistent warning by the lighthouse operator, it is possible that the captain's ship may have run aground at the cost of his ship, his life, and his crew—a devastating outcome to say the least. Although simplistic, this metaphor underscores the critical need for organizations to continually reassess their institutional paradigms in search of the lighthouses that may be in their path.

In 1996, the CORONA participants understood that the future of national security planning would be strewn with potential lighthouses. Given the changes in the post Cold War planning environment, it was clear to them that the Air Force would be required to change to meet future demands of air and space power. They could not rest upon their laurels and rely upon old paradigms (weapons, doctrine, training) to combat future enemies. CORONA realized that not changing could mean the downfall of airpower as we know it today which could ultimately bankrupt the security of the United States. In this context, the captain's plight in the metaphor does not seem quite as devastating. One specific area of change that the Air Force has focused on during the past five years was associated with the human elements of the organization: *culture, mores,* and *values.* In this light, the ASBC was chosen as one method for instilling such change at the lowest level of the officer corps.

Will ASBC Help the Air Force See the Lighthouse?

The answer to this question is "maybe." In review of the course from both quantitative and qualitative perspectives, it is apparent that ASBC achieved some of the goals that CORONA established for it in 1996 with respect to enhancing the technical (cognitive) knowledge of participants. Scores on the cognitive test demonstrated the significant increase in short-term knowledge that occurred by attending the course. Whereas this aspect of the course flourished, it is also apparent from the analysis that the attitudinal (affective) did not. The course did not proactively integrate attitudinal learning outcomes and the affective scores demonstrated this fact. Simply stated, the course did not change people's attitudes in a positive way. There were several reasons that one can point to in explaining why affective material was not as robust as expected:

- AU and ASBC staff did not incorporate external viewpoints from training programs like TBS or seek out civilian experts on the subject of affective learning.

- AU made course length decisions strictly upon cost and throughput without considering the ramifications for cutting portions of the curriculum.

- The course did not proactively incorporate affective learning outcomes into the lesson objectives.

Discussions that are going on today at Maxwell AFB have focused upon further cutting the ASBC duration from seven to four weeks in view of recent guidance provided from the AU. Similar to the reasons for why the course was cut from 16 to seven weeks, cost appears to be the main consideration this time as well. Likewise, there have been no cost-benefit analyses that have been conducted to determine if the move from seven to four weeks is a prudent one. Once again, the implication of reducing the duration of the course is that there is a lower probability that affective outcomes will be integrated or pursued. In fact, the course has been trimmed back to such an extent from the original 1996 vision of CORONA that it is not clear if four weeks of material would be worthwhile for the junior officers at all. Simply stated, at this point, not attending the course may actually be more beneficial (in a cost-benefit sense) to the Air Force than using resources on the training at all. Needless to say, policymakers should seriously

consider the issues and recommendations contained in this report prior to changing the course in FY99 or FY00.

Further Research is Warranted

Like many research endeavors, there always exists the opportunity for better data and methods to enhance the research process. Throughout this dissertation, I have alluded to several opportunities that would be of benefit for further study. The purpose of this last section is to summarize them as action items for further implementation.

Conduct a Longitudinal Assessment of the Impact of the ASBC

The results that were presented in this dissertation captured data that was collected immediately after the course was completed. Essentially, this assessment examined the short-run impact of change. The Air Force should consider periodic assessments in the future to determine if there are changes in cognitive and affective outcomes for both the treatment and the control groups. Similar to the analysis that was performed in this dissertation, the research should examine differences between various demographic variables like commissioning source, AFSC, and gender.

Control for Pre-Test Effects

Chapter 4 described an ideal experiment design methodology that controlled for the effects of students learning from the pre-test. Due to resource constraints, this methodology was not implemented. Future experimental designs should control for this effect.

Test for the Affective Impact of Blue Thunder

As Chapters 4 and 5 showed, the experimental design did not measure the affective impacts of the Blue Thunder exercise on the participants. Future designs should test this impact by providing a pre- and post-Blue Thunder affective survey and comparing the results.

Randomize Participants

This study highlighted the type of constraints that were placed upon the research design with respect to the randomization of the participants. Instead of using voluntary methods in future

research, the experiment should be implemented so that all participants are randomly selected to

participate.

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Appendix

A

Air University Shared Institutional Values Survey (December 1996)

"SHARED INSTITUTIONAL VALUES"
Questionnaire Completion Guide

AU SCN 96-32, Expiration date: 20 May 97

This questionnaire is designed to clarify assumptions concerning USAF officers' knowledge of airpower doctrine and history, application of teamwork and cohesion, and the adherence to institutional values within today's United Stated Air Force. HQ Air University requests your input to assist us in determining future directions for USAF educational programs.

This survey package includes a two-page questionnaire, a computer scan sheet, and a return envelope. Please mark the questionnaire, then transfer the answers to the scan sheet. Place both the questionnaire and the scan sheet in the envelope provided. We request completion of both the questionnaire and scan sheet so we can verify responses prior to the scanning process. A few more completion tips follow:

- Use a pencil.
- Circle your choices on the questionnaire, then mark the scan sheet.
- Items 1 through 28 request your response to a numerical scale of A (low) to E (high). Items 29 through 41 apply a five-point Likert Scale of Agreement, using the descriptors Strongly Disagree (SD) - A, Disagree (D) - B, Neutral (N) - C, Agree (A) - D, and Strongly Agree (SA) - E. A demographic section includes items 42 through 47. In some instances the demographic questions may not apply to your situation. Please indicate Not Applicable (N/A), and continue.
- Do not fold or staple.
- Do not leave stray marks.
- Erase scan sheet errors as cleanly as possible.
- Return the completed survey package to the survey administrator promptly.

We invite students, faculty, and educational support staff (curriculum, evaluation, technology, etc.) who are officer, enlisted, or senior civilians to participate in the survey.

Participation in this survey is voluntary and anonymous. To ensure your privacy, please DO NOT provide your name, SSAN, or any other personal identifiers not specifically requested by the demographics section. Responses will be compiled and reported as group data.

"SHARED INSTITUTIONAL VALUES" - A QUESTIONNAIRE

To what degree do Air Force officers:	Low				High
1. Understand airpower	A	B	C	D	E
2. Understand the role of doctrine	A	B	C	D	E
3. Appreciate military history	A	B	C	D	E
4. Share values	A	B	C	D	E
5. Share experiences	A	B	C	D	E
6. Share a common view on what it means to be an airman	A	B	C	D	E
7. Identify with technical specialties	A	B	C	D	E.
8. Demonstrate careerist attitudes	A	B	C	D	E
9. Persuasively articulate airpower doctrine	A	B	C	D	E
10. Value unit cohesion	A	B	C	D	E
11. Receive leadership training	A	B	C	D	E
12. Obtain experience in building unit cohesion/loyalty	A	B	C	D.	E

What priority should Air Force junior officer educational programs give the following curriculum topics?

	Low				High
13. Fundamentals of flight (simulation used to give every officer an aviation experience)	A	B	C	D	E
14. Fundamentals of space (space science and basics of space operations)	A	B	C	D	E
15. Fundamentals of information assisted by simulation (information science, information operations)	A	B	C	D	E
16. Fundamentals of war	A	B	C	D	E
17. Fundamentals of the profession of arms	A	B	C	D	E
18. Doctrine for all aspects of warfare through historical perspectives	A	B	C	D	E
19. Martial arts	A	B	C	D	E
20. Core Values	A	B	C	D	E
21. Honor/Ethics/Integrity	A	B	C	D	E
22. Teamwork and cohesion	A	B	C	D	E
23. AF missions, activities	A	B	C	D	E
24. Military (airpower) history	A	B	C	D	E
25. Airpower doctrine	A	B	C	D	E
26. Physical/mental conditioning	A	B	C	D	E
27. Current Events (World Affairs)	A	B	C	D	E
28. Mentoring responsibilities of a junior officer	A	B	C	D	E

29. The First and Second Lieutenants I know (or have known)	SD	D	N(OR N/A)	A	SA
demonstrate(d) an understanding of their role as AF officers and as agents of national security (Understand the Big Picture)	A	B	C	D	E

Based on my observation/experience, the typical Air Force work environment reinforces	SD	D	N	A	SA
30. Core values	A	B	C	D	E
31. Integrity	A	B	C	D	E
32. Ethics	A	B	C	D	E
33. Honor	A	B	C	D	E
34. Teamwork	A	B	C	D	E
35. Cohesion	A	B	C	D	E

The topics within this survey should be addressed by:	SD	D	N	A	SA
36. Commissioning Sources	A	B	C	D	E
37. Professional Military Education	A	B	C	D	E
38. Professional Continuing Education	A	B	C	D	E
39. New distance learning opportunities for all AF members	A	B	C	D	E
40. New course between commissioning and SOS	A	B	C	D	E
41. Unit-level activities	A	B	C	D	E

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DEMOGRAPHIC SECTION

42. Military Rank:

a. O1 - O3
b. O4 - O6
c. E1 - E5
d. E6 - E9
e. N/A (Civilian)

43. Component:

a. Active Duty USAF
b. USAF Reserves/Guard
c. Active Duty-Other US Service
d. DoD Civilian
e. Other (Please Specify_____)

44. Total years military or federal service:

a. Less than 5 years
b. 06 - 15 years
c. 16 - 20 years
d. 21 - 25 years
e. Over 25 years

45. Commissioning Source:

a. OTS
b. AFROTC
c. USAFA
d. Other (Please specify) _____
e. N/A

46. Which of the following describes your career field?

a. Pilot/Navigator
b. Non-rated operations (missiles, weapons controllers, etc.)
c. Non-rated support (maintenance, communications, personnel, etc.)
d. Non-line (doctors, lawyers, nurses, etc.)
e. N/A

47. Which of the following describes your current position within AU?

a. Faculty
b. Staff
c. Student
d. Other (Please Specify_____)

COMMENTS

What topics in addition to those addressed in Items 13-28 should be included in a course for junior officers?

Appendix
B

Air University Airman's Basic Course (ABC) Curriculum Structure Survey

(December 1996)

AIRMAN'S BASIC COURSE (ABC) CURRICULUM STRUCTURE
Questionnaire Completion Guide

AU SCN 96-33, Expiration date: 20 May 97

This questionnaire is designed to clarify assumptions concerning USAF officers' knowledge of airpower doctrine and history, application of teamwork and cohesion, and the adherence to institutional values within today's United Stated Air Force. HQ Air University has been tasked to develop the ABC curriculum and implementation options. To ensure we have a comprehensive program, we request your input through this questionnaire. Your help in this task is greatly appreciated.

This survey package includes a four-page questionnaire, a computer scan sheet, and a return envelope. Please mark the questionnaire, then transfer the answers to the scan sheet. Place both the questionnaire and the scan sheet in the envelope provided. We request completion of both the questionnaire and scan sheet so we can verify responses prior to the scanning process. A few more completion tips follow:

- Use a pencil.
- Circle your choices on the questionnaire, then mark the scan sheet.
- A demographic section includes items 1 through 6. In some instances the demographic questions may not apply to your situation. Please indicate Not Applicable (N/A), and continue.
- The curriculum emphasis section includes items 7 through 15 which request your opinion concerning the degree of emphasis various curriculum topics should receive in the ABC. These items apply a scale of A (low) to E (high) for your responses.
- The ABC goals section, items 16 through 25, solicit your responses to a five-point Likert Scale of Agreement, using the descriptors Strongly Disagree (SD) - A, Disagree (D) - B, Neutral (N) - C, Agree (A) - D, and Strongly Agree (SA) - E.
- Do not fold or staple.
- Do not leave stray marks.
- Erase scan sheet errors as cleanly as possible.
- Return the completed survey package to the survey administrator.

We invite students, faculty, and educational support staff (curriculum, evaluation, technology, etc.) who are officer, enlisted, or senior civilians to participate in the survey.

Participation in this survey is voluntary and anonymous. To ensure your privacy, please DO NOT provide your name, SSAN, or any other personal identifiers not specifically requested within the demographics section. Responses will be compiled and reported as group data.

AIRMAN'S BASIC COURSE (ABC) CURRICULUM STRUCTURE

The Problem: Concern has been expressed that "Most US Air Force officers do not understand airpower or the role of doctrine; most US Air Force officers do not appreciate military history; US Air Force officers lack shared values and experiences." Headquarters Air University would like your assistance in determining the curriculum direction for a new course, the Airman's Basic Course, which is currently in the design phase.

Description: The Airman's Basic Course is a proposed new course for second lieutenants. The purpose is to expose new officers to fundamental Air Force principles and foster officer corps camaraderie before new lieutenants arrive at their first assignment.

Your Task: To complete this questionnaire, please provide comprehensive written feedback for each open-ended question in the section provided. If you need additional space for your response, feel free to continue on additional sheets. Some questions and demographic items request a response to a scale. Please use the scan sheet provided to respond to the scale-response items.

DEMOGRAPHICS SECTION

1. Military Rank:

a. O1 - O3
b. O4 - O6
c. E1 - E5
d. E6 - E9
e. N/A (Civilian)

2. Component:

a. Active Duty USAF
b. USAF Reserves/Guard
c. Active Duty-Other US Service
d. DoD Civilian
e. Other (Please Specify_____)

3. Total years military or federal service:

a. Less than 5 years
b. 06 - 15 years
c. 16 - 20 years
d. 21 - 25 years
e. Over 25 years

4. Commissioning Source:

a. OTS
b. AFROTC
c. USAFA
d. Other (Please specify)_____
e. N/A

5. Which of the following describes your career field?

a. Pilot/Navigator
b. Non-rated operations (missiles, weapons controllers, etc.)
c. Non-rated support (maintenance, communications, personnel, etc.)
d. Non-line (doctors, lawyers, nurses, etc.)
e. N/A

6. Which of the following describes your current position within AU?

a. Faculty
b. Staff
c. Student
d. Other (Please Specify_____)

Please continue on the next page.

AIRMAN'S BASIC COURSE (ABC)
CURRICULUM EMPHASIS

What degree of emphasis should the following areas be given in the ABC?

	Low				High
7. Core Values	A	B	C	D	E
8. Honor/Ethics/Integrity	A	B	C	D	E
9. Teamwork and cohesion	A	B	C	D	E
10. AF missions, activities	A	B	C	D	E
11. Military (airpower) history	A	B	C	D	E
12. Airpower doctrine	A	B	C	D	E
13. Physical/mental conditioning	A	B	C	D	E
14. Current Events (World Affairs)	A	B	C	D	E
15. Mentoring responsibilities of a junior officer	A	B	C	D	·E

ABC GOALS

Items 16 through 25 request your opinions regarding the five goals for the ABC. Your written recommendations are also solicited. Please provide specific and candid written responses for each goal. Use additional sheets as needed.

GOAL 1: To establish a bond among the junior officer corps that a) reflects a shared vision of them as integral parts of the Air Force team (a shared sense of identify and outcome—who are we and what are we about), b) develops camaraderie from having shared common experiences rooted in a common set of core values and a common ethical code of behavior.

	SD	D	N	A	SA
16. This goal is an important element of the ABC structure	A	B.	C	D	·E
17. This goal can be accomplished	A	B	C	D	E

What subtopics are part of this goal? How should it be taught? (Class size, teaching methods, exercises....)

GOAL 2: To prepare the junior officer corps to become airpower advocates through a) the study of airpower history and doctrine, b) the study of great AF leaders, and c) participation in exercises and simulations that stress the critical nature of support to operational success.

	SD	D	N	A	SA
18. This goal is an important element of the ABC structure	A	B	C	D	E
19. This goal can be accomplished	A	B	C	D	E

What subtopics are part of this goal? How should it be taught? (Class size, teaching methods, exercises....)

GOAL 3: To maintain physical and mental fitness. To instill a personal desire to maintain individual wellness.

	SD	D	N	A	SA
20. This goal is an important element of the ABC structure	A	B	C	D	E
21. This goal can be accomplished	A	B	C	D	E

What subtopics are part of this goal? How should it be taught? (Class size, teaching methods, exercises....)

GOAL 4: To heighten junior officers' understanding and appreciation of the potential effects of current world events on national security and the Air Force.

	SD	D	N	A	SA
22. This goal is an important element of the ABC structure	A	B	C	D	E
23. This goal can be accomplished	A	B	C	D	E

What subtopics are part of this goal? How should it be taught? (Class size, teaching methods, exercises....)

GOAL 5: To prepare junior officers to accept personal responsibility for mentoring.

	SD	D	N	A	SA
24. This goal is an important element of the ABC structure	A	B	C	D	E
25. This goal can be accomplished	A	B	C	D	E

What subtopics are part of this goal? How should it be taught? (Class size, teaching methods, exercises....)

Please continue on the next page.

Letter from AU/CC to ASBC Survey Participants (June 8, 1998)

DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY (AETC)

U.S. AIR FORCE
1947-1997

Lieutenant General Joseph J. Redden
Commander, Air University
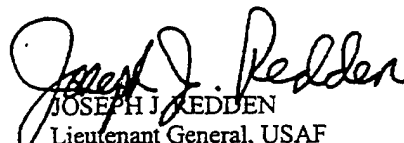55 LeMay Plaza South
Maxwell AFB AL 36112-6612

08 JUN 1998

Dear Air Force Team Member

It is my distinct pleasure to congratulate you on your recent commission in the United States Air Force. As a newly commissioned officer you have been selected as a member of a control group which will help us evaluate a new professional military education program called the Air and Space Basic Course (ASBC). The purpose of the ASBC is to "inspire new USAF officers to comprehend their roles as airmen who understand and live by USAF core values, articulate and demonstrate USAF core competencies, and who dedicate themselves as warriors in the world's most respected air and space force."

In order.to make the course the best available, we are soliciting your knowledge and opinions of Air Force doctrine, core competencies, culture, values, and standards. Your input is a critical part of the evaluation of ASBC, and will be incorporated into a briefing given to Air Force leadership at the CORONA conference scheduled for October 1998. It is extremely important that you complete as honestly and as accurately as you can both evaluation instruments without delay. There are instructions in this packet giving you more specific information and providing you with the worldwide web addresses you will need to complete the evaluation instruments.

Again, congratulations on your recent Air Force commissioning and thank you for your participation in the test phase of ASBC.

Sincerely

JOSEPH J. REDDEN
Lieutenant General, USAF
Commander

Golden Legacy, Boundless Future...Your Nation's Air Force

Appendix

D

Letter from ASBC/CC to ASBC Survey Participants (June 8, 1998)

DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY (AETC)

Colonel Stefan Eisen, Jr.   0 8 JUN 1998
Commandant, Air and Space Basic Course
155 West Maxwell Blvd.
Maxwell AFB AL 36112-6612

Dear Air Force Team Member

   Please allow me to add my congratulations along with those of Lt Gen Redden on your recent commissioning in the United States Air Force. Although your participation in this evaluation is voluntary, it is *extremely* important that you complete the entire evaluation without delay. The evaluation is composed of three parts: Part I – Demographics, Part II – Affective Survey, and Part III – Test. You will need to complete two evaluations, one today, and then a second time on or about **1 August 1998**. We estimate that it should take you approximately **1.5 hours** to complete the entire evaluation. Your privacy is guaranteed; the data gathered will be kept **confidential**. The data from the evaluation will not be attributed to or identified with any individual. All responses will be stripped of any personal identification information, coded with a special identifier, and pooled with others for analytical and inferential purposes only. For internal purposes we do ask that you provide your last name and the last four digits of your social security number so ASBC can track and notify participants.

   You will take this evaluation via the **Internet**. To obtain access to the evaluation just type **http://132.60.145.200/us/survey.html** or **http://ip145200.au.af.mil/us/survey.html** in the web address section. Once you enter the address, you will be given detailed instructions on completing the evaluation instrument. Please adhere precisely to those instructions. For access to this site your username is *asbccg* (all lowercase) and your password is *asbc@155* (all lowercase). Your contribution is critical to the success of this evaluation. Answer each question as honestly and accurately as possible. Please **DO NOT GUESS!** If you do not know the answer to the question or do not have an opinion then leave it blank on the written test and mark the "not applicable" or "don't know" blocks in the affective survey.

   The time you spend is deeply appreciated and will have significant impact not only on ASBC, but on all that attend this course in the future. Again, congratulations on your recent commissioning, your new profession as an officer in the United States Air Force, and thank you for participating in this extremely important evaluation of the Air and Space Basic Course.

                                         Sincerely

                                         STEFAN EISEN, JR., Colonel, USAF

Appendix

E

ASBC Cognitive Test

DEPARTMENT OF THE AIR FORCE
AIR AND SPACE BASIC COURSE (AETC)
MAXWELL AIR FORCE BASE, ALABAMA 36112

Do not leave this room with this test booklet.

1. Write your name, flight number, and last four digits of your social security number at the bottom of this test page. Then on the scanner sheet enter your name, flight number, and social security number in the appropriate spaces.

2. On the signal from your flight commander, begin the test. This is a closed book test. You should not have any materials available except this booklet and pencils. Read each question carefully and select the one **BEST** response. Individual effort is required on all ASBC Academic Tests.

3. You will have *1.5 hours* to answer *100 questions* and fill out the answer sheet. Stop working on the test at the end of the test period. Mark your answer selections directly on this test booklet by circling the answers you have chosen. When you have answered all questions to your satisfaction, transfer your answers carefully to the scanner sheet. Take your scanner sheet to one of the computers and carefully enter your SSAN and all of your test responses. Please make absolutely sure you accurately enter your answers into the computer. Answers in the computer are final. Answers on the scanner sheet will be used only in the case of a computer malfunction. Flight commanders will provide additional time for enter computer responses if necessary.

4. When you finish entering your responses, leave the flight room. **LEAVE ALL TEST MATERIALS IN THE FLIGHT ROOM.** Do not discuss answers in the hallways before the test review period.

Wait for instruction before turning this page.

Name_____.   Flight # _____
       Last   First   MI

LAST FOUR OF YOUR SSAN_____

1. In order to develop your own personal wellness, you must focus:

a. your effort on maintaining consistency in your exercise schedule.

b. on developing a well-balanced program that places emphasis on both physical and mental wellness.

c. on one aspect of your wellness at a time, since trying to deal with both simultaneously will lead to stress.

2. It is important for Air Force officers to maintain their physical and mental wellness because...

a. it directly impacts the ability of the Air Force to accomplish the mission.

b. it will ensure they meet Air Force weight control and mental health standards.

c. it will increase their life span after retirement to ensure they draw all of their retirement pay.

3. Which of the following **BEST** describes a reason why a nation might stop fighting?

a. The nation has won significant battles and realizes its enemy can no longer defend itself and is hopelessly defeated.

b. The nation's political leadership undergoes a Second Order Change and realizes it no longer has the material to defend itself.

c. The nation has suffered total defeat and realizes it no longer has the capability to fight, and therefore can not achieve its objectives.

4. Military theory is developed from which of the following?

a. Historical experience.

b. Execution of a strategy.

c. Experience gained from doctrine.

5. Which of the following are the three USAF Core Values?

a. Duty, Honor, Country

b. Service Before Self, Excellence in All We Do, Integrity First

c. Integrity First, Service Before Self, Organizational Excellence

6. The four reasons the Air Force selected our current core values are because these core values tell us the price of admission to the Air Force itself, they point to what is universal and unchanging in the profession of arms, they also...

a. help Air Force members select ethical career paths and help us get a fix on the ethical climate of the organization.

b. serve as beacons vectoring us back to the path of professional conduct and ensure we always follow the Ethics Check Questionnaire.

c. help us get a fix on the ethical climate of the organization and serve as beacons vectoring us back to the path of professional conduct.

7. Which of the following **BEST** explains the relationship between objectives and strategies?

a. Objectives drive the development of strategy.

b. Strategies determine which objectives we develop.

c. Objectives provide a general guide for developing strategy.

8. Which of the following **BEST** explains how objectives and strategies are related? Objectives and strategies from each level should support:

a. only that level, and not the objectives from any other level.

b. the level below, and ultimately a specific objective at the lowest level.

c. the level above, and ultimately the overall objective at the highest level.

9. The Department of Defense defines ethical values as...

a. beliefs and tenets developed over history from different religious tenets which were developed by early military leaders and passed down through time.

b. core beliefs such as duty, honor and integrity that relate to what is right and wrong and thus take precedence over non-ethical values when making ethical decisions.

c. beliefs and tenets such as integrity first, excellence in all we do and service before self, values we should always strive to adhere to when making all professional decisions.

10. As a new lieutenant, you will be confronted with numerous situations where you will have to make critical decisions. According to material presented in the lecture and readings, which of the following sources can you look to for ethical guidance in making decisions?

a. Manual for Courts Martial, Chapter 2, Ethics

b. DOD Regulation 5500-7, Joint Ethics regulation

c. AF Instruction 36-5500, Ethics for US Air Force Officers

11. Air and Space doctrine can **BEST** be defined as:

a. detailed plans to meet specific objectives.

b. directives on the conduct of Air and Space operations.

c. general beliefs and guidelines mainly based on past experience.

12. Which of the following is the **BEST** example of how doctrine influences strategy?

a. At the beginning of our involvement in Vietnam, political leadership determined target selection for the air campaign.

b. Air forces were redirected during the Gulf War to locate and destroy Scud missile launchers that were used to attack Israel.

c. Commanders considered theoretical advantages of stealth technology in combat situations when planning F-117 attacks on Baghdad.

13. Mentoring is important to the future accomplishment of the Air Force mission because it ensures

a. senior officers pick the best young leaders for promotion.

b. junior officers are briefed on future strategies at selected points in their career.

c. Air Force institutional values and culture are passed to a future generation of leaders.

14. In the mentoring process, it is the responsibility of the senior officer to...

a. schedule mentoring sessions with each of her subordinates on a monthly basis.

b. encourage and promote the professional growth and professionalism of ones subordinates.

c. conduct the mentoring session in compliance with the Air Force Mentoring Guide Checklist.

Match the following descriptions of aircraft in column A with their *PRIMARY* function in column B.

Column A	Column B
15 Newest operational fighter used against high value targets in high threat environments.	a. EA-6B
	b. F-16
16 DoD's primary Suppression of Enemy Air Defense (SEAD) aircraft.	c. MH-53
17 Allows special operation forces (SOF) to infiltrate, exfiltrate, or resupply forces as needed.	d. F-22
	e. F-117

18. Which statement **BEST** explains Air and Space Superiority?

Air and Space Superiority is the degree of dominance:

a. wherein opposing Air and Space Forces are incapable of effective interference anywhere in a given theater of operations.

b. that permits friendly Air and Space Forces to operate at a given time in a given place without prohibitive interference by the opposing forces.

c. that allows friendly Army, Navy, and Air and Space Forces to operate at a given time in a given place without interference by the enemy.

19. Going after the enemy's air assets in order to destroy or neutralize them on the ground before they can launch **BEST** describes . . .

a. Offensive Counterair

b. Defensive Counterair

c. Interceptive Counterair

20. Which of the following items is the **BEST** example of the Defensive Counterair (DCA)?

a. Destruction of enemy surface to air missiles using bomber aircraft.

b. Using fighter aircraft to destroy enemy bombers enroute to friendly air bases.

c. Using fighter aircraft to destroy enemy aircraft as they launch from their own airfield.

21. Thirteen friends got together to form a model airplane club. The group works together to set club goals. Based on this information, at what stage of development is this group on COGs Ladder?

a. Bid For Power

b. Why We're Here

c. Constructive

22. The seven steps of teambuilding include establishing clear objectives, providing for openness and confrontation, individual development, support and trust, and ...

a. Compassion - Competence - Leadership

b. Compassion – Competence – Delegation

c. Co-operation and conflict - Competence – Leadership

d. Co-operation and conflict – Leadership - Delegation

23. Which statement **BEST** describes a benefit airpower offered to the stalemate of trench warfare as the use of airpower evolved in WWI?

a. Pursuit aircraft destroyed Zeppelins carrying German troops before they could deploy more reinforcements to the front line to engage in trench warfare.

b. Aircraft, including dirigibles, were used for observation that allowed ground commanders to better prepare for attacks and counterattacks.

c. Strategic bombing destroyed bulldozer factories and tool manufacturing plants that debilitated Germany's ability to dig trenches.

24. Which statement **BEST** describes a benefit airpower offered to the stalemate of trench warfare as the use of airpower evolved in WWI?

a. Terror bombing on cities brought German soldiers home from the trenches to search for loved ones.

b. Pursuit aircraft destroyed German observation and escort aircraft thus protecting the movements of the allies.

c. Strategic bombing destroyed machine gun factories and barbed wire manufacturing plants that debilitated Germany's ability to engage in trench warfare.

25. Which statement **BEST** explains how airpower systems are employed during air operations?

a. Regardless of the intent for which a weapon system was developed, it is the mission that dictates how an aircraft is employed at the tactical level.

b. Employing airpower during air operations involves recognizing the immediate and distant shortfalls of your weapon systems and adapting the mission to minimize the amount of risk to friendly forces.

c. Our current weapons systems are specifically designed to meet the specific Functions of Airpower and if a mission does not support the aircraft, the mission is modified to maximize the effectiveness of our weapon systems.

26. Which of the following examples **BEST** demonstrates how airpower systems are employed during air operations?

a. The F-15Es and A-10s performing CAS, air interdiction, strategic attack, or any task necessary to accomplish the mission.

b. The A-10s only performing Close Air Support (CAS), while F-15Es concentrate only on high-value ground targets using precision guided munitions.

c. The F-117s and F-15Cs targeting high-value ground targets in a high-threat environment, while EA-6Bs perform Suppression of Enemy Air Defenses (SEAD) missions.

27. Which of the following BEST describes the concept of force packaging?

a. Force packaging involves the integration of aircraft, each performing specific functions, to accomplish a mission or series of missions.

b. Force packaging involves actions to divert, disrupt, delay, or destroy the enemy's surface military potential before it can be used effectively against friendly forces.

c. Force packaging involves assigning total expected effort by percentage and/or priority that should be devoted to the various air operations and geographic operations for a given period of time. ·

28. Which answer BEST summarizes the core competency of Precision Engagement? Precision Engagement provides the ability to: ·

a. control and utilize forces to cause select results.

b. attack rapidly and persistently with a wide range of munitions.

b. go on the offensive as well as protection from the enemy doing the same.

29. Which statement BEST describes a function of intelligence?

a. The gathering of information for precision targeting.

b. The monitoring and controlling of current air and ground operations.

c. The identification, detection, and destruction of ground-based weapon launches as they occur.

30. Which precision weapon uses the enemy's own electronic emissions for targeting?

a. Maverick Missile

b. Air-Launched Cruise Missile

c. High-Speed Anti-Radiation Missile

31. Which statement **BEST** describes the impact radar technology had on early precision weapons?

a. Radar technology eliminated bombing problems cause by aircraft motion and airspeed.

b. Radar technology ensured that bombs were released at the right time and place to hit the target.

c. Radar technology aided in eliminating bombing problems caused by weather and low visibility.

32. Which of the following **BEST** describes a problem that may complicate Joint Force Air Component Commander (JFACC) operations?

a. Uniformity of service perspectives on the way to use air power leads to the phenomenon of groupthink.

b. Detailed implementation procedures and techniques restrict the ability of the Joint Force Commander to adapt to unique situations.

c. Differences in service views on the best way to use air power contribute to a lack of institutionalization within the joint and Air Force communities.

33. Which of the following **BEST** describes how the Joint Force Air Component Commander (JFACC) uses his/her authority to unify joint air power during theater air operations?

a. The JFACC's apportionment recommendation helps avoid partiality by ensuring each service has equal representation of airpower.

b. The JFACC functions as the Area Air Defense Commander and Airspace Control Authority as well as Theater Missile Defense Commander.

c. The JFACC recommends apportionment to the Joint Force Commander which includes such things as what percentage of air operations involve close air support to Army ground troops.

34. Which of the following **BEST** defines the command relationship Combatant Command (COCOM)?

a. The authority to exercise general direction of the supporting effort, designate and prioritize targets or objectives, designate timing and duration of the supporting action, and other instructions necessary for coordination and efficiency.

b. The transferable authority exercised over subordinate forces by commanders at any echelon at or below the level of combatant command to organize and employ commands and forces, assign tasks, designate objectives, and give authoritative direction necessary to accomplish the mission.

c. The non-transferable authority exercised over assigned forces by commanders of unified or specified combatant commands to organize and employ commands and forces, assign tasks, designate objectives, and give authoritative direction over all aspects of military operations, joint training, and logistics necessary to accomplish the missions assigned to the command.

35. Which of the following BEST defines the command relationship SUPPORT?

a. The transferable authority of commanders at any echelon at or below the level of combatant command to coordinate specific functions and activities involving forces of two or more military departments or two or more forces of the same Service.

b. The authority to exercise general direction of the supporting effort, designate and prioritize targets or objectives, designate timing and duration of the supporting action, and other instructions necessary for coordination and efficiency.

c. The exercise of authority over subordinate or other organizations with respect to administration and support, to include organization of Service forces, control of resources and equipment, personnel management, unit logistics, individual/unit training, readiness, mobilization, demobilization, discipline, and other non-mission-related matters.

36. Which response explains President Eisenhower's advocating the expansion of U.S. space capabilities?

a. A fear of a surprise Soviet nuclear attack.

b. His desire to attain a long-range nuclear delivery platform.

c. He wanted to preclude commercial exploitation of space.

37. Which item BEST describes a space program that was developed as a result of expansion in the U.S. Space program in 1958.

a. A lunar military base system designed to launch military activities in space.

b. The creation of the Defense Meteorological Satellite Program to survey weather data.

c. The NAVSTAR Global Positioning System designed to provide navigation aid to the military.

38. Which of the following statements BEST explains the concept of Space Superiority?

a. Space Superiority is the amount of space control needed to maneuver or employ space forces at will while denying the same freedom to an enemy.

b. Space Superiority is the ability to help our forces with the freedom to conduct operations without impedance from our adversaries.

c. Space Superiority is the degree of space support necessary to sustain and engage space forces at will while denying the same capability to an adversary.

39. A special operations team from Hurlburt Field has infiltrated the enemy's border and gone behind the enemy lines. Their mission is to destroy a ground station that controls, routes, and receives information from enemy satellites.

Which of the following functions does the above scenario BEST summarize?

a. Force Application

b. Offensive Counterspace

c. Defensive Counterspace

40. Which of the following BEST states a strength and a limitation in space support to a theater CINC?

a. strength - the absence of overflight restrictions, limitation - vulnerability due to predictability

b. strength - the high vantage view point space offers, limitation - vulnerability due to lack of protection for space assets

c. strength - the ability to launch satellites immediately for reconnaissance, limitation - vulnerability due to lack of maneuverability

41. The importance of space support to the warfighter is BEST explained as the ability to . . .

a. capitalize on data gathered from space force enhancement to gain an advantage over the enemy

b. experiment with technology in a non-hostile environment for future potential wartime applications

c. ensure satellite operability and usefulness through the functions of Telemetry, Tracking, and Commanding

Match the following Department of Defense major planning system purpose with the proper planning system. The choices may be used once, more than once, or not at all.

42._____DoD resource management system, controlled by the SecDef, used to establish, maintain, and revise the Future Year Defense Plan.

a. Joint Strategic Planning System (JSPS)

b. War Mobilization Planning System (WMPS)

43._____The formal means for the Chairman, Joint Chiefs of Staff (CJCS) to carry out his statutory responsibilities to give strategic plans and direction to the Armed Forces of the United States.

c. Planning, Programming and Budgeting System (PPBS)

d. Joint Operations Planning and Execution System (JOPES)

44._____Both Deliberate and Crisis Action Planning utilize this system developed to standardize the planning procedures and processes throughout the US military community.

e. Crisis Action Planning System (CAP)

45. Which of the following provides guidance, assigns specific planning tasks, and apportions forces?

a. Defense Planning Guidance (DPG)

b. Joint Strategic Capabilities Plan (JSCP)

c. Program Decision Memorandum (PDM)

d. Program Objective Memorandum (POM)

46. The CINC's staff developing several courses of action (COAs) for National Command Authority (NCA)/Chairman, Joint Chiefs of Staff (CJCS) review is outlined in which phase of the Crisis Action Planning process?

a. Phase III

b. Phase IV

c. Phase V

47. Which of the following statements **BEST** describes Phase VI of the Crisis Action Planning process?

a. The Commander-in-Chief (CINC) directs the completion and submittal of supporting plans to the Chairman, Joint Chiefs of Staff (CJCS) approved Operations Plan (OPLAN).

b. The CINC executes the Operations Order (OPORD) and directs subordinate and supporting commanders to execute their supporting OPORDs.

c. The National Command Authority (NCA)/Joint Chiefs of Staff (JCS) analyze the situation to determine whether a military option should be prepared to deal with the evolving problem.

48. Which component of United States Transportation Command (USTRANSCOM) is responsible for operating all common user ports around the world, as well movement of forces and resupply within CONUS?

a. Air Mobility Command

b. Military Sealift Command

c. Military Traffic Management Command

49. Which of the following is the **BEST** example of intertheater mobility?

a. Airlifting troops and supplies from Jiddah, Saudi Arabia to Riyadh, Saudi Arabia for combat support.

b. Airlifting a spare radar from Eglin AFB to Luke AFB to in order to support F-16 flying operations.

c. Airlifting an Air Control Squadron from CONUS to Turkey to support Operation Northern Watch.

50. Which of the following **BEST** describes the contextual elements that necessitated Operation NICKEL GRASS?

a. Deficiencies in aerial refueling, command and control, and management of airlift resources required a sealift option.

b. Due to operational constraints such as overflight , landing, airspace limitations, and the threat of Soviet intervention, the US resorted to transferring supplies and equipment to El Al airliners at Lajes Field.

c. The balance of power in the region was impacted by the Soviet support of Arab nations and the US wanted to support its commitments to Israel without committing US combat troops.

51. Which statement BEST identifies how the Air Force contributed to the success of Operation NICKEL GRASS?

a. By surpassing Soviet airlift capability by airlifting 25% more cargo over 3 times the distance with half as many missions.

b. By capitalizing on airlift and using bases in Spain to resupply Israel with needed equipment and supplies, the balance of power was restored in the region, without committing US troops.

c. By utilizing the air base in the Azores and covert supplies from Great Britain, airlift was utilized in providing an air bridge to Israel.

52. Which of the following is the BEST is the example of how the USAF components interact in order to fulfill the Total Force?

a. A USAFR C-5 makes an emergency landing at Dobbins Air Reserve Base, GA; where it's repaired by the personnel assigned there.

b. Colonel Gibbar, USAFR (the AU-Reserve Liaison), reviews and contributes to the curriculum development for Air Force Reserve Professional Military Education.

c. An active duty C-141 lands at La Guardia International Airport, NY and up-loads a New York Air National Guard unit bound for Incirlik AB, TU in support of Operation PROVIDE COMFORT.

53. Which of the following BEST describes how the active and reserve components support the Total Force?

a. The components of the USAF are similarly equipped to support almost any tasking the National Command Authority gives us.

b. The components of the USAF regularly exercise together so that we are able to support almost any tasking by the National Command Authority.

c. The components of the USAF are trained and similarly equipped to the standards necessary to fulfill almost any tasking from the National Command Authority.

54. Which of the following is one of the five National Critical Infrastructures?

a. Transportation

b. Global Economy

c. Interstate Commerce

55. Which of the following lists are the four components of security as it relates to National Information Infrastructure?

a. Traceability, Reliability, Availability, Confidentiality

b. Integrity, Reliability, Availability, Confidentiality

c. Integrity, Reliability, Availability, Securability

56. Which of the following **BEST** describes how limited intelligence capabilities hindered the effectiveness of air operations in Operation COMMANDO HUNT?

a. The North Vietnamese discovered how we determined our targets.

b. Most bomb damage assessment was accomplished visually by aircrews after the attack.

c. The North Vietnamese became adept at finding and destroying the electronic sensors dispersed by US aircraft.

57. Which answer BEST describes the problem with using "trucks destroyed/damaged" as a measure of success during Operation COMMANDO HUNT?

a. It was impossible to see trucks on the Ho Chi Minh Trail due to the jungle canopy.

b. This method of assessment did not take into account the trucks destroyed in MiG Alley.

c. Many vehicles, though damaged and counted as "destroyed/damaged," were able to continue with their missions.

58. Which of the following statements BEST describes how deception contributed to the success of the Israelis in the 1967 Arab-Israeli War?

a. The Israeli methods of deception were so successful that they were able to launch their offensive against Egypt and Syria with complete surprise.

b. Deception allowed the Israelis to launch a surprise attack on Egypt. In addition, it allowed them to destroy the Egyptian Air Force by dividing it and focusing on smaller numbers.

c. Deception by the Israelis made the Egyptians, Jordanians, and Syrians believe that the United States and Great Britain had entered the war and provided additional landing craft in the Gulf of Aqaba demoralizing the enemy.

59. Which of the following statements BEST describes how deception contributed to the success of the Israelis in the 1967 Arab-Israeli War?

a. The appearance of relocating landing craft into the Suez Canal established a false military objective for Israel.

b. The aerial distribution of pamphlets along the border of Egypt advocating peace and cooperation gave the Egyptians a false sense of security.

c. The appearance of business as usual by the Israeli military on days just preceding the start of the war enabled a surprise attack by the Israeli military.

60. Which of the following is the **BEST** example of Military Operations Other Than War?

a. The United States is involved in combat operations in Asia. The goal is to achieve national objectives as quickly as possible on terms favorable to the US and its allies. These operations are highly sensitive to changes in political objectives and are governed by strict Rules of Engagement.

b. The United States is involved in special operations in Africa. The goal is to achieve national objectives as quickly as possible on terms favorable to the US and its allies. These operations are relatively insensitive to changes in political objectives and are governed by liberal Rules of Engagement.

c. The United States is involved in non-combat operations in South America. The goal is to achieve national objectives as quickly as possible on terms favorable to the US and its allies. These operations are highly sensitive to changes in political objectives and are governed by liberal Rules of Engagement.

61. Which of the following **BEST** explains the concept of Military Operations Other Than War (MOOTW)?

a. MOOTW refers to the use of military capabilities in both combat and non-combat to deter war, resolve conflict, promote peace, and support civil authorities.

b. MOOTW encompass all aspects of military operations short of violence. These operations include humanitarian assistance and domestic support operations.

c. MOOTW primarily refers to those military operations supporting those who serve in combat roles, including transportation, air traffic control, and civil engineering.

62. Which of the following **BEST** describes how the Law of Armed Conflict (LOAC) impacts air and space operations?

a. The LOAC is designed to protect non-combatants from unnecessary suffering, and therefore attacks planned against military targets and combatants are not typically affected.

b. The LOAC provides benefits to the attacker by ensuring only targets of military importance are attacked and to those under attack through special protection from inhumane attack.

c. The United States strictly adheres to the LOAC for humanitarian reasons despite the fact that it limits the number and type of targets we can attack without offering any real military advantages.

63. Which of the following **BEST** describes the differences between the Laws of Armed Conflict (LOAC) and Rules of Engagement (ROE)?

a. ROE provide guidance for US forces on when/if to engage in combat or continue combat, while the LOAC regulates the conduct of states and combatants during hostilities.

b. ROE regulate the conduct of states and combatants during hostilities, while the LOAC provides guidance for US forces on when/if to engage in combat or continue combat.

c. ROE are the rules the US abides by during peacetime operations or Military Operations Other Than War (MOOTW), whereas we adhere to the LOAC after war has been declared to prevent wartime atrocities.

64. Which of the following was **NOT** significant to the development of doctrine at the Air Corps Tactical School?

a. Development of the B-17.

b. Development of the incendiary bomb.

c. Development of the Norden Bombsight.

65. Which of the items below **BEST** completes the following statement.

Demands of bombers during World War II included:

a. strategic attack on Japanese cities.

b. mine laying operations in the Tokyo Bay.

c. close air support of ground troops for Operation SEALION.

66. Which answer **BEST** summarizes the concept of Global Attack?

a. Provides the freedom to attack as well as the freedom from attack worldwide.

b. The ability to control and employ forces to cause discriminate results worldwide.

c. The capability to conduct sustained offensive operations on short notice worldwide.

67. Which answer **BEST** describes a function of Global Attack?

a. Staying power over hostile territory.

b. Operations to secure freedom of action for friendly forces.

c. Operations to command control and employ forces to cause select results.

68. Lieutenant Smith, an MPF Flight Chief, is enrolled in a master's program at a local college. The day before a final exam a civilian friend of his offers him a copy of the final he "found." The Lieutenant takes a copy of the test. After the exam is given, the Lieutenant and several other students are implicated in the cheating scandal and expelled from the school. Lieutenant Smith's actions will most likely result in...

a. no impact on the Air Force since the incident is not military related and people will not be able to connect the incident to the Air Force.

b. a negative impact on the Air Force because officials at the school will implicate other Air Force officers in the incident and expel them, too.

c. a negative impact on the Air Force since knowledge of the incident will spread and people will attribute the Lieutenants dishonesty to other Air Force officers.

69. An officer's off duty professionalism is important because...

a. ethical or integrity lapses off-duty may be attributed to on-duty performance.

b. commanders closely monitor officers' off-duty behavior for performance evaluations and promotion recommendations.

c. an officer's off-duty behavior will always lead to negative press for the Air Force which will impact the American public's view of our ability to accomplish our mission of defending the nation.

70. According to the reading, Strategic Air Command's concept of day to day peacetime ground alert was designed to provide a force that prevented war by...

a. being ready for instant takeoff in time of crisis.

b. prepositioning SAC's tanker fleet at forward air bases.

c. ensuring all of SAC's bombers were ready to respond to a sneak attack.

71. Following World War II, the United States military demobilized in an effort to keep a lid on defense spending. How did the cost saving methods help create the Strategic Air Command?

a. Nuclear weapons carried by bomber aircraft were viewed as an economic, sensible way to conduct war.

b. US leaders thought ballistic missiles could be cheaply developed as a deterrent force.

c. Bomber aircraft with jet engines were viewed as an inexpensive alternative to an extensive fighter aircraft fleet.

72. Which of the following **BEST** explains the five stages of the Joint Air and Space Operations Plan (JASOP) process?

Once you gain an understanding of enemy and friendly capabilities, and the environment, you would determine air and space power objectives, which support theater objectives. From there:

a. you should decide which specific enemy targets will achieve the objectives. Then you build strategies to attack those specific targets. Finally, you create a generalized time line of operations to execute your plan.

b. you should decide which specific enemy targets will achieve the objectives and build a very generalized phase time line. Then you would build strategies to mesh your master air attack plan with the army and navy theater battle plans. Finally, you would integrate all your data into one final plan.

c. you should decide which vital enemy centers, if destroyed, will have the greatest effect in achieving the objectives. Then you can build strategies to support the objectives and affect those vital centers identified earlier. Finally, you integrate all your data gained thus far into phase directives and develop the plan.

73. Assume you are a Joint Forces Air Component Commander. Which of the following is the BEST example of applying the operational art to planning air and space operations?

During both planning and execution you . . .

a. refer to the CINC approved "options list" to best integrate your forces into the most effective air and space power weapon.

b. rely on your judgement, based on experience and knowledge to best integrate your forces into the most effective air and space power weapon.

c. decide to not stray from the original strategy at all, feeling it would detract from your desire to integrate your forces into the most effective air and space power weapon.

74. Which of the following BEST explains the process of Operational Environment Research, as it is initially applied in Stage I of the JASOP process.

MOST effort in this stage is focused on gaining information about:

a. enemy leadership and its military capabilities.

b. the theater from which operations will most likely be launched.

c. the theater of operations and the enemy and friendly forces available.

75. Which of the following is the BEST example of the process of operational environment research, as it is initially accomplished in Stage I of the JASOP process?

a. Using the "force times four" process for defeating enemy air tactics

b. Using open sources, such as newspapers and the internet, to study enemy air force assets

c. Using the logical process of preparing for action against the enemy air force by planning for defeating a force at least as good as our own

76. Which of the following **BEST** describes the main targeting problem encountered during Operation ROLLING THUNDER?

a. Because of the backward economic status of North Vietnam, we were unable to determine an effective target list, which would have a significant impact.

b. We failed to provide aircraft with alternative targets to hit, if the primary targets were too heavily defended.

c. Politicians in meetings that did not include airpower-targeting experts conducted targeting.

77. In order to send a clear and unequivocal message to North Vietnam, the U.S. dropped 4,000 tons of bombs on Hanoi during one 15-minute period on 26 December 1972. What tenet of airpower were we maximizing by this effort?

a. Balance

b. Concentration

c. Persistence

78. Which of the following **BEST** explains the process of analyzing the enemy and friendly environment as a system?

Looking at the enemy and friendly environment from:

a. a building block approach in which inductions are gained by gathering small facts.

b. a strategic perspective which involves a deductive process where details are derived from general principles.

c. an operational perspective which involves a serial process in which details are gained directly from specific fact-based data.

79. Which of the following is the **BEST** example of the infrastructure element of Warden's Five Rings Model?

a. Targeting selected airfields and factories

b. Destroying the country's main crops and irrigation system

c. A direct attack on the enemy's leader and its communications

80. Which of the following **BEST** identifies how Contextual Elements influenced the outcome of DESERT SHIELD/STORM?

a. Politics – which led to prohibition of alcohol consumption in Saudi Arabia.

b. Synergy – which was critical to the success of Task Force Normandy during the opening minutes of the war.

c. Leadership – which allowed air campaign planners to exploit Saddam Hussein's highly centralized command and control network.

81. Which example **BEST** describes how the Core Competency of Air Superiority influenced the outcome of DESERT SHIELD/STORM? Air Superiority influenced the outcome of Operation DESERT SHIELD/STORM:

a. the correct mixture of forces in the Gulf to provide both a deterrent force and a defensive force in the region.

b. by specifically identifying and tracking of Iraqi ground force positions with the Joint Surveillance Target Attack Radar System (JSTARS)?

c. by using Combat Air Patrol (CAP) to ensure safety of coalition forces while providing the opportunity for other aircraft to engage targets throughout Iraq.

82. Which of the following BEST explains the basic process for integrating information from the first four stages of the Joint Air and Space Operations Plan (JASOP) planning process during Stage V, to build the JASOP? It involves integrating efforts from:

a. concept approval. In doing so, you make general phasing determinations, as well as a general Air Tasking Order (ATO).

b. concept validation. In doing so, you make more specific phase directive determinations, as well as a Master Air Attack Plan (MAAP).

c. concept development. In doing so, you make general phasing determinations, as well as specific phase directive determinations.

83. Which of the following is the BEST example of integrating information from the first four stages of the Joint Air and Space Operations Plan (JASOP) planning process during Stage V, to build the JASOP?

You identify the enemy leadership's communication systems as a key Center of Gravity (COG) that will support a theater objective. You create a strategy to destroy that COG by using air strikes. As a result, during Stage V you:

a. create a Master Air Attack Plan which highlights striking the enemy's main communications facility during Phase Two.

b. create a general phased time line, and decide to strike the enemy's main communications facility early in Phase Two.

c. create an air tasking order designating a four-ship of F-117s to strike the enemy's main communications facility during Phase Two.

84. Which of the following BEST explains how Warden's Five Rings and Nodal Analysis complement each other when analyzing a large, complex system?

a. Analyze a system by dividing it into five general areas and choosing a target within one of those areas for a possible strike.

b. Analyze a system first by dividing it into five general areas, then choose a critical part in that area and break it down into a more specific description of that critical part.

c. Analyze a system first by doing a detailed examination of each individual part of the system, then divide it into five general areas to get an overall profile of the system.

85. Which of the following is the BEST example of properly using Warden's Five Rings and Nodal Analysis together to analyze a large, complex system?

a. Determine each function of the following areas: leadership, system essentials, infrastructure, population, and fielded forces. Then, place each part of the system into these areas for further analysis. Conclude by describing these parts in detail to formulate a plan for adversely affecting the system.

b. Place each part of that system into one of the following areas: leadership, system essentials, infrastructure, population, and fielded forces. Then, choose one of those parts to further analyze by identifying the nodes, describing the links, and determining how you want to affect the system. Conclude by identifying the critical node(s) to determine the most efficient way to adversely affect the system.

c. Describe the purpose of the following areas: leadership, system essentials, infrastructure, population, and fielded forces. Once that is complete, determine the parts of those areas and analyze the system by identifying the nodes, describing the links, and determining how you want to affect the system. Conclude by identifying the critical node(s) to determine the most efficient way to adversely affect the system.

86. Applying the 3D model, determining immediate and long term results, and using Objective-based targeting when analyzing an enemy system **BEST** summarizes which of the following tools?

a. Nodal Analysis

b. Targeting for Effect

c. Combat Assessment

d. Warden's Five Rings

87. Which of the following statements **BEST** describes Effects and Effectiveness of Targeting for Effect?

a. Effect considers how long-term targeting impacts a conflict on a more strategic level, while Effectiveness considers how short-term targeting impacts a conflict on a more tactical level.

b. Effect is the immediate impact that attacking a target has on the situation in front of you, while Effectiveness is the eventual impact that attacking that same target has on the entire conflict.

c. Effect is the eventual impact that attacking a target has on the entire conflict, while Effectiveness is the immediate impact that attacking that same target has on the situation in front of you.

88. Which of the following **BEST** explains a contribution the Air War Plans Division (AWPD) made with AWPD-1 to the current Joint Air and Space Operations Plan (JASOP) planning process? AWPD-1 demonstrated:

a. he planning process that ultimately became the JASOP Planning process.

b. that clear-cut national objectives are not needed in order to develop an effective JASOP.

c. that intelligence used to develop the JASOP comes solely from military intelligence sources.

89. The Air War Plans Division Air Operations Plan (AWPD), AWPD-1, made many contributions to what we now call the Joint Air and Space Operations Plan (JASOP) planning process. One of these contributions is that the JASOP process is not necessarily a sequential process but involves the operational art. Which of the following **BEST** explains this contribution?

a. Objective Determination can be performed after Center of Gravity (COG) Analysis.

b. Operational Environment Research, COG Analysis, and Strategy Development can be performed simultaneously.

c. Operational Environment Research does not need to be performed before Objective Determination, but should be performed before Strategy Development.

90. Agile Combat Support is **BEST** defined as the.....

a. system through which the armed forces of the US sustains, and protects air and space capabilities to accomplish missions in support of Air Force operations.

b. processes with which the Air Force creates, sustains, and protects air and space capabilities to accomplish missions in support of military operations.

c. composite of activities outside of actual air and space operations that provide support to the Support Group Commander at a given installation.

91. Which of the following **BEST** describes lessons learned from DESERT SHIELD/STORM?

a. Inadequate strategic airlift resources hampered rapid mobilization.

b. Use of host-nation contract support was a dismal failure.

c. Use of the Civil Reserve Air Fleet was ineffective and eventually discontinued.

92. Designing and fielding systems with higher reliabilities and fewer spare part requirements BEST describes the Agile Combat Support principle of:

a. effective beddown and sustainment.

b. leveraging system design technologies.

c. leveraging information technologies.

93. Who is responsible for integrating and synchronizing the available capabilities of air, land, sea, and special operation forces to achieve objectives assigned by the combatant commander or the National Command Authorities (NCA)?

a. Joint Force Commander (JFC)

b. Force-Air Warfare Commander (FAWC)

c. Control and Reporting Center (CRC) Battle Commander

94 Select the alternative that BEST describes the contribution of the Airborne Warning and Control System (AWACS) to air operations.

a. AWACS provides on scene battle/crisis management and can act as an alternate airborne Air Support Operations Center (ASOC).

b. AWACS provides ground and air commanders with situational awareness and near real-time targeting support for ground targets.

c. AWACS provides extended and low-level radar coverage of airborne vehicles, augmenting the range and capability of ground radar.

95. This senior agency receives status updates and feedback from other Theater Air Ground System (TAGS) elements and uses them to update airspace planning documents and targeting priorities, and to centrally control air operations. This **BEST** describes the . . .

a. Joint Operations Center (JOC)

b. Wing Operations Center (WOC)

c. Joint Air Operations Center (JAOC)

96. The primary mission of the JAOC is to . . .

a. develop budget inputs for flying operations

b. develop the Commander's Estimate for time-sensitive planning

c. produce, disseminate, and monitor the Air Tasking Order

97. Which of the following **BEST** describes actions that a base takes to prepare for deployment?

a. Conducts exercises, participates in IG Inspections, and accomplishes recurring training.

b. Recalls all base personnel, establishes mobility processing line, and processes base personnel through this line.

c. Activates a Crisis Action Cell, a Deployment Control Center, and marshals equipment and cargo to a secure area.

98. Verifying base personnel's worldwide readiness eligibility, ensuring equipment meets current operational standards, and confirming proper documentation is complete **BEST** describes how a base . . .

a. prepares for deployment.

b. responds to an alert order.

c. responds to a deployment order.

d. prepares for an operations order.

99. Whitsell Air Force Base consists of a fighter wing, composed of two operational fighter squadrons, one fighter training squadron, a helicopter squadron and several tenant organizations belonging to other Major Commands. The two operational fighter squadrons are tasked to deploy along with small contingents from several base support agencies such as personnel, medical, security forces, supply, and maintenance. Once this contingent has deployed, the base would **MOST LIKELY** . . .

a. discontinue base flying activities but continue to operate the air traffic control tower for transient aircraft use.

b. curtail all nonessential support activities such as educational services and family support center activities.

c. continue to provide most base services, although access to some services such as medical may be more limited.

100. A large portion of Renfrew Air Force Base has deployed. Which of the following **BEST** describes activities that would most likely occur at home base?

a. Discontinuation of functions such as security, command post, air traffic control and weather.

b. Increased support for deployed family members through Family Support Center and religious programs.

c. Increased access to educational opportunities and personal pursuits for remaining military members.

ASBC Affective Survey and Results

ASBC Affective Survey (Appendix F)

Question #	Statement	Treatment Pre-test Mean	Treatment Post-Test Mean	Control Pre-Test Mean	Control Post-Test Mean
1	It is important to stand-up for what is right even when my actions may be unpopular	5.56	5.36	5.65	5.76
2	In a crisis situation, regardless of how bad things get, my fellow officers will be there for me	4.99	4.57	4.96	5.12
3	It is better to not make a decision, than to make a mistake	1.81	1.87	1.63	1.62
4	The Air Force is too large an organization for my opinions to matter	2.02	2.42	2.08	2.43
5	Air Force officers do the right thing even when no one is looking	4.85	4.51	4.72	4.62
6	The Air Force encourages its people to develop self-respect	5.40	5.16	5.21	5.14
7	I expect to leave the Air Force after my initial service commitment	2.20	2.60	1.41	1.10
8	I would try to prevent a breach of integrity even if it meant going against a senior officer.	5.19	5.04	4.99	5.10
9	The needs of my family are more important than the needs of the Air Force.	3.56	3.62	3.14	2.95
10	The Air Force actually does hold officers accountable for their professional actions.	5.14	4.90	4.80	4.57
11	Junior officers are held to a higher standard of professional performance than senior officers	2.27	2.42	2.14	2.12
12	Air Force officers have an obligation to hold each other accountable for their actions	5.47	5.17	5.36	5.36
13	The Air Force trusts my judgment	5.01	4.88	4.83	4.38
14	Air Force officers actually do take responsibility for their actions	4.96	4.71	4.68	4.57
15	Male officers are held to a higher standard of professional performance than female officers.	1.83	2.10	2.16	2.21
16	I believe that team success is more important than personal achievement	5.48	5.22	5.09	5.38

ASBC Affective Survey (Appendix F)

Question #	Statement	Treatment Pre-test Mean	Treatment Post-Test Mean	Control Pre-Test Mean	Control Post-Test Mean
17	Air Force officers live up to the commitment of their personal oaths (marriage, fraternity, sorority, family)	4.95	4.80	4.65	4.69
18	Senior officers are interested in what I have to say	4.69	4.61	4.45	4.31
19	Officers should be held accountable by the Air Force for their personal actions	5.22	5.23	5.26	5.33
20	I am treated with respect by senior officers	5.17	5.01	4.96	4.88
21	I identify with officers from my career field more than officers from other career fields	3.47	3.48	2.76	3.24
22	My bond to officers from my commissioning source on average is stronger than my bond with officers, in general.	3.79	3.31	3.14	3.62
23	Air Force officers are open with each other	4.44	4.32	3.91	4.19
24	Air Force officers are not afraid to admit their mistakes	4.03	3.83	3.80	3.93
25	All Air Force officers share the bond of trust, regardless of career field	4.75	4.52	4.31	4.26
26	Senior officers are held to a higher standard of professional performance than junior officers	3.54	3.25	3.10	3.14
27	All Air Force officers have equal potential, regardless of career field	3.90	3.51	3.36	3.02
28	Female officers are held to a higher standard of professional performance than male officers	2.00	2.15	1.91	2.05
29	I chose to be an Air Force officer because of the free education and training	2.40	2.57	2.31	2.86
30	I am willing to spend more time at a task to make something right even if I know that my supervisor will not realize the difference	5.39	5.10	5.20	5.29
31	Air Force officers are expected to take responsibility for their actions	5.50	5.27	5.51	5.48
32	Being an air force officer is fun	5.10	4.92	4.28	4.67
33	The Air Force encourages me to act on my own convictions	4.59	4.49	4.33	4.29

ASBC Affective Survey (Appendix F)

Question #	Statement	Treatment Pre-test Mean	Treatment Post-Test Mean	Control Pre-Test Mean	Control Post-Test Mean
34	I chose to be an Air Force officer because of the prestige	3.21	3.36	3.46	3.33
35	The Air Force does a good job of punishing those who should be punished	4.32	4.16	3.55	3.21
36	If I had the opportunity today, I'd choose another profession.	1.76	1.96	1.56	2.00
37	The Air Force encourages its officers to share their success with those who made it possible	4.98	4.81	4.25	4.67
38	I expect Air Force officers to be honest with each another.	5.58	5.42	5.54	5.43
39	The USAF is more committed to me than I am to it	1.91	2.15	1.82	2.12
40	There are times when it is proper to use anger to enforce a decision	2.48	2.72	2.55	2.52
41	Air Force officers should demonstrate self-control in all endeavors	5.55	5.40	5.49	5.50
42	I am treated with respect by other lieutenants	5.34	5.02	4.41	5.05
43	The Air Force will always honor its commitments to me	4.43	3.94	3.72	3.29
44	Getting ahead in the USAF is a result of politics moreso than hard work	2.87	3.12	2.74	3.07
45	Senior air force officers are not expected to follow rules as stringently as are junior officers	2.29	2.44	2.36	2.43
46	Understanding basic Air Force doctrine is important for carrying out my duties as an Air Force officer	5.26	4.96	5.13	4.71
47	I am more committed to the USAF than it is to me	3.20	3.40	3.05	3.29
48	If I do my best at whatever job the Air Force gives me, my career will take care of itself	4.53	4.39	4.44	4.50
49	No one should be compelled to accept an assignment that he or she does not want	2.63	2.62	2.54	2.62
50	I would stand-up for what is right even if it might hurt my career	5.28	4.98	5.06	4.98

ASBC Affective Survey (Appendix F)

Question #	Statement	Treatment Pre-test Mean	Treatment Post-Test Mean	Control Pre-Test Mean	Control Post-Test Mean
51	I am confident that I have the knowledge to be able to discuss the role of the core competencies with my new commander	4.45	5.16	4.40	3.88
52	I am proud to be an Air Force officer	5.70	5.61	5.70	5.76
53	All Air Force officers have equal potential, regardless of commissioning source	4.58	4.34	4.23	4.02
54	Air force officers can be trusted in all situations	4.43	4.29	4.37	4.38
55	Non-rated USAF personnel don't need to understand airpower doctrine as thoroughly as do rated personnel	1.84	2.12	2.02	2.45
56	Rewards for good performance are equal across officer career fields	3.56	3.41	2.63	2.40
57	The Air Force encourages me to continuously challenge myself to improve my performance	5.15	5.08	5.03	4.83
58	Senior officers are treated with respect by junior officers	5.44	5.28	5.28	5.26
59	Honesty is always the best policy, regardless of the personal consequences.	5.32	5.20	5.19	5.05
60	I chose to be an Air Force officer because of the job security.	2.89	3.04	3.10	3.31
61	If required to choose, the needs of the Air Force are more important than my own personal needs	4.69	4.42	4.60	4.60
62	Successful teamwork requires that I effectively listen to others ideas	5.66	5.54	5.70	5.67
63	The Air Force believes that team success is more important than personal achievement	5.31	5.17	5.22	4.93
64	I understand basic Air Force doctrine	4.65	5.21	4.84	4.00
65	I accept decisions of senior officers,, even if I disagree with them.	5.06	4.96	5.01	5.12
66	Air Force officers from my commissioning source are better on average than officers from other commissioning sources	2.51	2.77	2.39	2.55
67	Successful teamwork requires that I effectively communicate my ideas	5.55	5.47	5.61	5.48

ASBC Affective Survey (Appendix F)

Question #	Statement	Treatment Pre-test Mean	Treatment Post-Test Mean	Control Pre-Test Mean	Control Post-Test Mean
68	If forced to choose between my own moral convictions and what my supervisor expects, I would choose to follow my own conscience	4.75	4.71	4.05	4.31
69	Air Force officers demonstrate high moral standards through their actions	5.07	4.82	4.92	4.86
70	I am better prepared to be an Air Force officer than those who preceded me	3.94	4.74	2.44	2.67
71	I am confident that I could articulate how the air force core competencies relate to U.S. national security	4.01	5.00	4.08	3.55
72	I chose to be an Air Force officer because I wanted to pursue a rewarding occupation	4.82	4.87	5.02	4.83
73	Air Force officers live up to the commitment of their professional oaths (oath of office)	5.11	4.99	5.00	4.83
74	Officers commissioned through my source of commissioning on average have greater integrity than those commissioned through other sources	2.22	2.49	1.86	2.10
75	Understanding airpower theory and the proper allocation of airpower makes me a more valuable air force officer	5.25	5.06	4.84	4.55
76	The needs of my closest friends are more important than the needs of the Air Force	1.88	2.10	1.89	2.12
77	Exercising self-control in personal situations is a professional responsibility	5.47	5.42	5.47	5.52
78	I consider myself to be a deeply religious person	3.80	3.90	3.73	3.57

Note: These means were based upon the raw score data (i.e. data was not recoded to reflect a positive answer to the question). The analysis that was conducted in Chapter 5 shows mean scores that were based upon a recoding of the response to reflect a consistent, positive answer. The following numeric scheme was used in the Likert   scale   (1=strongly   disagree;   2=disagree;   3=slightly   disagree;   4=slightly   agree;   5=agree;   6=strongly   agree).

Appendix

G

Data Analysis Methods

For the most part, there were two types of statistical methods accomplished in this dissertation: 1) descriptive statistics that showed means, standard deviations, and absolute counts; and 2) inferential statistics from which substantiated conclusions can be drawn. Within the realm of inferential statistics, there were two tools that were common to both the cognitive and affective analyses: one-way Analysis of Variance (ANOVA) and t-tests. The One-Way ANOVA technique was used to compare demographic variables to determine if there were statistically significant differences among groups. T-tests were used to determine the impacts of the ASBC on the demographic groups from the pre-test environment to the post-test timeframe. All descriptive and inferential statistical analyses were completed with the use of Excel and SPSS 8.0.[128]

Use of the One-Way ANOVA Procedure

The One-Way ANOVA is used to test the hypothesis that groups are equivalent relative to a particular measure (dependent variable). It is done by comparing the within group variance to the between group variances and determining if this is statistically different. One-Way ANOVA was computed on three groups based on source of commission: Air Force Academy, Officer Training School, and Air Force Reserve Officer Training Corps (AFROTC). The dependent variable used in the ANOVA was either the cognitive test scores or the affective survey responses. The null hypothesis (H_o) for the ANOVA test was that the test score/survey means of the sources of commissioning were equal to one another. From the One-Way ANOVA, an F-test statistic (and associated p-value) was calculated to determine whether or not the null hypothesis

could be rejected. For all portions of the analysis (both cognitive and affective), a significance level of .05 was used to assess the hypothesis statement.[129]

The Use of t-tests

Although t-tests were not used for the comparisons between groups, the t-test was used for two other analyses: 1) determining if there are significant differences in the pre- and post-test outcomes within a group and 2) to determine if the pre-test cognitive and affective scores for each group are statistically identical. In the first case, a paired sample t-test procedure was used to compare the means of two variables (pre- and post-test scores). Essentially, the paired sample t-test computes the differences between values of the two variables for each case and tests whether the average differs from zero. In the second case cited above, an independent samples t-test procedure was used to compare the means for two groups of cases (treatment vs. control). This test assumes that the subjects were randomly assigned to two groups so that any difference in response was due to the treatment (or lack of treatment) and not to other factors. In both cases, the null hypothesis (H_o) for the t-test is that the two groups' means are equivalent (or that the difference of the means is equal to zero). Likewise, for both tests a significance level (α) of .05 was used to evaluate the hypothesis. In the first case, if the p-value of the t-statistic was significant at the .05 level, the null hypothesis was rejected, and it was concluded that the means (pre and post-test) for the same group were not equivalent; this translates into a qualitative statement indicating that a change had occurred as a result of the treatment. In the second case, rejecting the null hypothesis would indicate that the treatment and control groups were not equivalent (i.e. cognitive or affective test scores were not equal).

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[128] The following statistical references were used in conducting the analysis: Edwin Mansfield, "Statistics for Business and Economics," W.W. Norton and Company, 1994; Peter Kennedy, "A Guide to Econometrics," MIT Press, 1996; Neter, et al., "Applied Linear Statistical Models," Irwin Publishing, 1996.

[129] In this case, One-Way ANOVA was chosen over t-test to reduce the possibility of Type I (α) error, i.e., rejecting the null hypothesis when in fact the decision should have been fail to reject. t-tests for pairs of means are not completely independent of each other, therefore, increasing the probability of Type I error (SPSS for Windows Base System user's Guide, p. 269-273).

Appendix

H

Test Validity, Instrumentation, and Reliability

Cognitive Test

Content Validity. The ASBC relied primarily on content validity to determine the usefulness of its testing program. To promote content validity, each educational objective was written at a specific level of learning using Bloom's cognitive taxonomy. For each lesson objective, three or more specific learning outcomes were developed to operationally define and serve as significant measurable samples of evidence of achievement of the educational objective based upon Brennan's (1981) and Gronlund's (1988) research. Within the limitations of available test items and time allocated for testing, a goal of three test items, written on each specific learning outcome, was established to measure each lesson educational objective. The specific items were reviewed by the TIRC for comprehensive coverage of the educational objective. The school attempted to ensure that students did not fail due to faults of the testing and instructional programs. All students who failed to achieve a 70% score on each weekly quiz were counseled and provided guidance by their flight commander. Students who failed to achieve the 70% on the post-test were remediated and brought up to standards prior to being allowed to graduate from the course.

Construct Validity. The ASBC used (a) the opinions of judges, and (b) an appeal to logic as reasonable means of determining construct validity. This judgment was based on the purpose of the testing program, the use of test scores in the decision making process, and lack of a validated criterion for criterion group studies. Morris and Fitz-Gibbon (1978) reported using (a) and (b) above as two methods for determining construct validity; however, they state this procedure is subject to criticism especially where the credibility of the judges is questionable. Cronbach (1970) identified three parts to construct validation: (a) suggest what constructs might

account for test performance, this is an act of imagination based on observation or logical study of the test; (b) derive testable hypotheses from the theory surrounding the construct, this is purely logical operation; and (c) carry out an empirical study to test on hypothesis after another (p. 143). Cronbach's position is supported by other researchers (Berk, 1984; Brennan, 1981; Issac & Michael, 1982; Graham & Lilly, 1984; Jordan, 1991; Kerlinger, 1973, and Shepard, 1984).

The curriculum planning board (CPB) and test item review committee (TIRC), were also responsible for all curricular decisions described earlier, served as the judges described by Morris and Fitz-Gibbon (1978). These judges validated all educational objectives at a specific level of learning using the cognitive taxonomy (Bloom, 1980). The lesson objectives were affirmed as operationally defined by validating a minimum of three observable, measurable, specific instructional outcomes (Gronlund, 1985a). Test items were qualitatively confirmed as measuring the specific behavior identified in the instructional outcome. This use of judges served as necessary evidence of construct validity to affirm (a) that there is a hierarchical classification of the educational objectives, (b) that specific instructional outcomes operationally defined the lesson objectives, and (c) that test items were constructed to measure the specific instructional outcomes.

Another means of supporting construct validity was an appeal to logic. That is, the students were briefed on testing procedures, provided adequate time for administration without rushing; hints and clues to answers were not given away by other items; and there was no bias in scoring. The ASBC allocated two hours for administration and review for the post-test and one and a half hours for each weekly quiz. A specific time for each test was computed at 1.5 minutes per test item. The average testing time was approximately 90 minutes, not including scanner answer sheet marking and entering into the computer. The remainder of the two-hour block was spent in reviewing weak areas and for immediate feedback. Based on time spent by each student on tests in previous trials, the average reading rates of prior students, and the position that college students should be able to answer the typical multiple-choice test item at the rate of one question per 1.5 minutes (Ebel, 1979; Gronlund, 1988), this procedure ensured that the

slowest students had time to complete the test (Gronlund, 1988) and reduced the negative impact of other factors such as test anxiety and reading speed.

Hints and clues to answering in item formats and instructions were reduced with a critical review by the TIRC which used Gronlund's (1988) rules for constructing multiple-choice questions. All tests and quizzes were computer scores thereby eliminating scoring bias. To ensure that each student received the same test instructions, the flight commander for each seminar (24 students) read the test instructions as the students followed in their test booklets. Students were advised periodically during the testing period of the time remaining. Finally, to provide the student and flight commander an opportunity to raise concerns about specific test items, test item critique forms were provided in each test package to be completed at the end of the review period.

Instrumentation

ASBC developed instruments measured academic achievement – a pre and post-test consisting of 100 questions and four weekly quizzes used for formative feedback to the student. All test instruments were designed using a multiple-choice format and measured specific learning outcomes. The weekly quizzes varied in length based on the material presented during each week of the first four weeks of the course. An assessment of the instrument's reliability and validity is provided as follows:

Reliability

Descriptive statistical data for the tests used in this research are summarized in Figure H.1. The computations used in Figure H.1 were calculated using appropriate procedures identified in SPSS for Windows, Version 8.0. Reliability coefficients were computed using Cronbach's Alpha and the Kuder-Richardson formulae (Bruning & Kintz, 1968).

Figure H.1 Reliability Index for ASBC Cognitive Tests

Test	N	Items	Difficulty Index (%)*	Discrimination Index**	Reliability***
Pretest	311	100	44.18	.38	.84
Quiz 1	311	22	80.21	.35	.60
Quiz 2	311	26	80.19	.40	.59
Quiz 3	311	40	81.81	.57	.65
Quiz 4	311	23	74.80	.51	.66
Posttest	311	100	74.14	.50	.90

*Difficulty index = mean of all item difficulty indices; computed on one best answer.
**Average discrimination index for the test computed on one best answer.
***Cronbach's Alpha and Kuder-Richardson formulae – analysis of variance of each score from the mean (Bruning & Kintz, 1968).

Ebel (1979) indicated achievement tests used at the college level reflects reliability coefficients of .50 or lower. However, reliability of at least .60 (Blood and Budd, 1972) seems to be more acceptable. Morris and Fitz-Gibbon (1978) consider above .70 as respectable; Gronlun (1988) indicated classroom tests usually between .60 and .80. Cronbach's Alpha (SPSS for Windows 8.0, 1998) was used to compute the reliability (inter-item) coefficients for achievement test for this study group. The split-test (odd-even) procedure was also used due to arrangement of the test items by instructional outcome thus providing a shortened parallel test. The Spearman-Brown formula (Brown, 1983; Lien & Lien, 1980) was used to statistically correct reliability coefficients, resulting from the split-test procedure, to the original length of the test. However, "demonstration of reliability, therefore, is necessary but not conclusive evidence that an instrument is valid" (Morris & Fitz-Gibbon, 1978, p. 90).

Affective Survey

Similar to the reliability analysis performed on the cognitive test, a reliability analysis was also conducted on the affective survey as well. The analysis was conducted in SPSS 8.0 and

examined whether or not the instrument could be considered to be reliable. The output from this analysis is presented below. The alpha associated with the output indicates that the instrument was considered to be reliable at a level of .9523.

Figure H.2 Reliability Analysis for Affective Survey

```
R E L I A B I L I T Y   A N A L Y S I S   -   S C A L E   (A L P H A)

Analysis of Variance

Source of Variation      Sum of Sq.      DF      Mean Square    F          Prob.

Between People           992.8517        68      14.6008
Within People            6868.0128       5313    1.2927
Between Measures         2265.1834       77      29.4180        33.4647    .0000
Residual                 4602.8294       5236    0.8791
Total                    7860.8645       5381    1.4609

Grand Mean       4.6717



Reliability Coefficients     78 items

Alpha =   .9398         Standardized item alpha =   .9523
```

Appendix

Demographic Variable Description

Item	Responses	Variable
1. What is your last name?		Name
2. Last 4 digits of social security number:		Social Security Number
3. What is your rank?	2Lt 1Lt Captain Major	Rank
4. What is your age?		Age
5. What is your gender?	Male Female	Gender
6. What is your martial status?	Married Not Married	Marital Status
7. Which of the following best describes your ethnic background?	American Indian/Alaskan Asian/Pacific Islander Black (non-hispanic) Hispanic White (non-hispanic) Other/Unknown	Race
8. Which of the following best describes your military status?	Air Force Active Duty Air Force Reserve Air National Guard	Military Component
9. Do you have prior service as an enlisted servicemember?	Yes or No	Prior Service
10. Were either (or both) of your parents in the military?	Yes or No	Parents in the Military
11. Do you consider yourself to be a deeply religious person?	Yes or No	Religious Preference
12. What is your source of commissioning?	Air Force Academy Officer Training School Reserve Officer Training Corps Other	Commissioning Source
13. If you were commissioned through ROTC, what was your ROTC Detachment?		ROTC Detachment
14. If you were commissioned through ROTC, were you a scholarship student?	Yes or No	ROTC Scholarship Status
15. Which is the highest academic degree that you have been awarded?	Associate Bachelors Masters PhD/MD/JD	Highest Academic Degree
15. Which area is most closely associated with your undergraduate degree?	Business Education Liberal Arts Sciences	Academic Major
16. What was your undergraduate grade point average (A=4.0)?		Undergraduate GPA
17. What is your duty AFSC?		AFSC
18. Do you want to be at the Air and Space Basic Course (ASBC)?	Yes or No	Motivation to attend ASBC